TASAR SILK
INDUSTRY
IN INDIA

Report of the Tasar Silk Committee

1966

MINISTRY OF COMMERCE
GOVERMENT OF INDDIA

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Constitution of the Tasar Silk Committee

Constitution

Government of India vide Ministry of Commerce Resolution No. 59(1) / 65-Tex(G) dated 16th June, 1965 set up a Committee to investigate into the question of developing further the production of Tasar Silk which has a great export potential and to review the working of the existing schemes for the development of the tasar industry.

The Committee comprised the following:—

(1)	Shri S. V. Ramaswamy, Deputy Minister of Commerce, Government of India.	Chairman
(2)	Shri T. S. Pattabiraman, Member, Rajya Sabha & Vice-Chairman, Central Silk Board.	Member
(3)	Smt. Jahanara Jaipal Singh, Member, Rajya Sabha.	„
(4)	Shri Bhagwat Jha Azad, Member, Lok Sabha.	„
(5)	Shri Sham Lal Saraf, Member, Lok Sabha.	„
(6)	Shri H. C. Soy, Member, Lok Sabha.	„
(7)	Shri A. N. Ramachandran, Director (Export Promotion), Office of the Textile Commissioner.	„
(8)	Shri S. R. Ullal, Secretary, Central Silk Board.	Member-Secretary.

Terms of Reference

1.2. The terms of reference of the Committee were as follows :—

(a) To review the working of the existing schemes for the development of tasar industry in the States of Bihar, Madhya Pradesh and Orissa and to make a report on the working of all these schemes including:

(i) the supply of tasar silkworm seeds;
(ii) running of tasar seed supply stations and sub-stations; and
(iii) other technical and administrative matters including re-organisation of existing schemes and introduction of necessary new schemes.

(b) To examine and recommend the further measures that may be needed for the speedy development of the tasar industry to meet the increasing export demand.

The Central Silk Board vide its letter No. CSB|TS|65|890 dated 19th July 1965 had requested the Committee to include the following within the scope of its studies:—

(c) Fixation of floor price for tasar cocoons.

(d) Examine the proposal of the Government of Madhya Pradesh to set up urgently a Corporation under the conjoint auspices of the Central Silk Board and the tasar States of Bihar, Madhya Pradesh and Orissa.

At its 2nd meeting held in New Delhi on 27th August, 1965, the Committee agreed to include the above two items in its investigations.

Date for Submission of Report

1.3. As per the original resolution constituting the Committee, the report was due for submission by 16th September, 1965. However, having regard to the complexity of the studies involved and the unavoidable absence of the Chairman of the Committee for about a month on a special assignment in the United Kingdom, the Committee requested the Government of India to extend the time for submission of the report to 31st March, 1966 which was agreed to by the Ministry of Commerce vide its letter No. 59(1)|65-Tex(G) dated 8th February, 1966.

The Committee met on 21st February, 1966 and finalised its report.

Acknowledgement

1.4. The Committee conveys its sincere thanks to the Governments of Bihar, Orissa, Madhya Pradesh, West Bengal, Maharashtra, Andhra Pradesh and Uttar Pradesh for their co-operation in the matter of compiling the factual data relating to the progress of Tasar industry in the country.

We are also grateful to the Government of Bihar and the Officers of its Department of Industries for the excellent facilities afforded to the members of the Tasar Silk Committee to make a spot study of tasar industry in this foremost Tasar State in India.

The Committee also wishes to place on record its most sincere appreciation of the hard work put in by the staff of the Central Silk Board in the collection of the basic data and preparation of this report.

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CHAPTER — II

Mode of Inquiry

Meetings

2.1. The Committee met 5 times as follows:—

(i)	26th July, 1965	New Delhi
(ii)	27th August, 1965	„
(iii)	25th September, 1965	„
(iv)	26th November, 1965	„
(v)	21st February, 1966	„

The first meeting was held to draw up the plan of approach to the proposed studies and to frame a questionnaire for issue to the States for eliciting information about the present condition of the tasar industry in the different States.

The fourth meeting was convened to have joint discussions with the technical and administrative officers of the tasar States so that the local problems could be more precisely appraised.

The second and third meetings had a limited objective of discussing the replies received from the States to the Committee's questionnaire and to formulate recommendations to ensure orderly development of the tasar silk industry.

The final meeting was held on 21st February, 1966 at New Delhi to consider the draft report of the Committee.

Questionnaire

2.2. A detailed questionnaire (Appendix-I) as approved by the Committee at its first meeting held on 26th July, 1965 was issued to the Governments of Andhra Pardesh, Bihar, Madhya Pradesh, Maharashtra, Orissa and West Bengal vide letter No. CSB|TS|65|890 of the Committee dated 30th July, 1965. The States were requested to ensure that their replies reached the Central Silk Board's Secretariat before 21st August, 1965.

In connection with the discussions at the 4th meeting of the Committee held on 26th November, 1965, the representatives of the tasar States were also requested vide D.O. Letter No. CSB|TS|65|890 dated 18th November, 1965 to furnish detailed information about the economics of tasar industry in the respective States — from cocoon to fabric stage and also to submit the latest progress report on the development schemes for tasar under implementation in the States.

On-the-Spot Studies In the States

2.3. With a view to having a closer look at the activities in the States for development of tasar silk industry, the Committee visited Bihar between 27th and 30th October, 1965. The Committee was able to study the activities at the following centres:—

Chaibasa (Dist. Singhbhum) — (i) Tasar Seed Supply Station.
(ii) Marketing Organisation.
(iii) Weaving Demonstration Section.

Hatgamaria (Dist. Singhbhum) — (i) Training-cum-Production Centre.
(ii) Tasar rearings by tribal rearers.

Ranchi Central Tasar Research Station (Central Silk Board).

Bhagalpur (i) Government Silk Institute, Nathnagar.
(ii) Handloom Fabrics Corporation (Prop: Mohammed Ishaque).
(iii) Weavers' Co-operative Society, Nathnagar.

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Discussions with Rearers, Trade, Business and Officers, Connected with the Industry

2.4. Meetings were held at Chaibasa, Hatgamaria and Bhagalpur during the itinerary of the Committee in Bihar to elicit the views of persons engaged in the various sectors of the industry from cocoon raising to weaving and export of tasar fabrics. Besides, the meetings at Chaibasa and Hatgamaria were attended by the local members of Bihar State Legislative Assembly and by the Deputy Commissioner of Singhbhum District which enabled the Committee to have the official as also non-official views on the various problems of tasar industry.

CHAPTER — III

Global Distribution of Tasar Silk Industry and Its Position in India

In this chapter an attempt is made to briefly describe the global distribution of tasar silk industry, its position in India and the main characteristics of its set up with a view to facilitate an objective appraisal of its peculiar problems.

What Is Tasar?

3.1. Tasar, tussore or tussah is the silk produced by some wild species of silkworms belonging to the family "Saturniidae". The more important of the species producing tasar silk which belong to the genus "ANTHERAEA" are listed below:—

	Species		Distribution
(1)	A. pernyi	—	China
(2)	A. yamamai	—	Japan
(3)	A. mylitta	—	India
(4)	A. paphia	—	India
(5)	A. sivalika	—	India
(6)	A. roylei	—	India

3.2. World Distribution of Tasar Silk

3.2.1. **China**: The Peoples' Republic of China is by far the largest producer of tasar silk in the world — accounting as she does for more than 90% of the global output of tasar silk. The Chinese tasar worm **A. pernyi** (a bivoltine) feeds on oak leaves **(Quercus serrata; Q. dentata; Q. acustissima etc.)**. The cocoon is brown, egg-shaped and somewhat large and more or less formed in between two leaves. The tradition of tasar rearing in China is several centuries old and this industry has been playing a vital role in the rural economy more especially in the north-eastern provinces of Liaoning, Shantung and Honan. The Sino-Japanese war of the 3rd and 4th decades of the present century virtually spelt the ruin of this industry. The Republican Chinese Government has however rehabilitated the industry in recent years. Even so, it is reported that hardly 20% of the existing host plants are being utilised for tasar rearings. The Chinese research workers have isolated a number of distinct strains of **Antheraea** among which the following are mentioned:—

(i) Greenish-silkworm;
(ii) Yellowish;
(iii) Greenish yellow;
(iv) Silvery white; and
(v) Shantungs which display various shades of blue colouration.

Besides being used as a textile fibre, tasar is reportedly in demand in China for ammunition bags, parachutes, acid-proof work clothes and equipment. It is also being used extensively in the manufacture of flexible cords and tyres.

Japanese Tasar

3.2.2. While Japan has a distinct species of tasar silkworm viz., **A. yamamai,** the commercial production of tasar silk is not very significant. **A. yamamai** is a univoltine race of tasar silkworms. Tasar rearing is reported to have been introduced in Japan by about the beginning of the 19th century and was localised to Ariake area of Nagano prefecture. The highest quantity reared was in 1897 when 2,50,000 gms. of eggs were reportedly reared to produce 500 kan of silk. Tasar silk was sent to Kyoto and other weaving centres all over Japan to meet the ever increasing demands. Its use was mainly mixed with ordinary mulberry silk for the manufacture of neckties, obis (scarves) crepe-de-chine and luxurious apparel.

A. yamamai worms are greenish. From 1000 cocoons about 300 gms. of silk filament can be reeled. Cocoon filament is about 600 metres long and 5 to 6 deniers in size. It is superior to mulberry silk in tensile strength, elongation, graceful lustre and peculiarly fine dyeing effect. **A. yamamai** hatches towards the end of May and in 45 to 50 days or towards the first week of July spins cocoon. **A. yamamai** is brown in the 1st and 2nd stages, but turns green towards the 4th stage and has no spots while **A. pernyi** is brown throughout the larval stage. Moreover, it has more than 10 small black dots.

Indian Tasar

3.2.3. Next only to Chinese tasar, Indian tasar occupies a position of prominence in the tasar map of the world.

As already mentioned under para 3.1, India has a number of species of Antheraea of which **A. mylitta** is by far the most important commercial producer of tasar silk. The taxonomy of **A. mylitta** is not yet clearly defined and **A. paphia** is distinguished with difficulty from mylitta. However, broadly it may be stated that mylitta moths have the colouring monotonously yellowish red in the male and yellowish-brown in the female, while paphia moths exhibit a distinct inside red and outside white post-median line.

The tasar silkworms of India are polyphagous and feed on a variety of food plants. However, the main food plants are listed below in the order of importance:—

Botanical Name	**Family**	**Common Name**
(1) Terminalia tomentosa	Combretaceae	Asan
(2) T. arjuna	do	Arjun
(3) Shorea robusta	Dipterocarpaceae	Sal
(4) Zizyphus jujuba	Rhamnaceae	Beri
(5) Eugenia jambolana	Myrtaceae	Jamun
(6) Terminalia catapa	Combretaceae	Jungly Badam
(7) Lagerstroemia parviflora	Lythraceae	
(8) Quercus dentata	Phagaceae	Banj (Kashmir)
(9) Q. incana	do	Moru (Kashmir)

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Indian tasar worm occurs mostly in the tract of the country bounded by the Ganges in the north, the Godavari in the South, Orissa coast in the south-east and the Narmada river and the Kaimur mountains in the north-east. Tasar industry is mostly concentrated in Bihar, Madhya Pradesh and Orissa with pockets of production in Birbhum district of West Bengal, Chandrapur and Bhandara districts of Maharashtra, Adilabad, Warrangal, Khammam, Mahaboobnagar and Karimnagar districts of Andhra Pradesh and Mirzapur district of Uttar Pradesh. As per information furnished by the States, there are about a lakh of tasar rearers in the country. The State-wise dispersal is given below:—.

Table-I

State	No. of tasar rearers
Bihar	50,000
Orissa	15,000
Madhya Pradesh	25,000
West Bengal	10,000
Maharashtra	3,000
Andhra Pradesh	951
	1,03,951

Output of Tasar Silk in India

3.3.1 The production of tasar silk in India during 1964 was 2,24 lakhs of kg. as against 2.29 lakhs of kg. in the preceding year. The output of tasar cocoons is generally expressed in terms of "kahans". A "kahan" in Bihar is 1280 cocoons or 16 pans of 80 cocoons each. In Orissa the practice is to count 1600 cocoons per kahan i.e. 20 pans of 80 cocoons. In Maharashtra the unit of count is "khandi" of 4000 cocoons. Table-II below gives the statewise estimates of cocoon production as furnished in reply to the Committee's questionnaire vis-a-vis the production of tasar silk reported to the Central Silk Board for the year 1964:

Table-II

State	Production	
	Tasar cocoons in kahans of 1280 cocoons	Tasar silk in lakhs of kg. (1964)
(1) Bihar	1,13,000	0.80
(2) Orissa	50,000	0.16
(3) Madhya Pradesh	30,000	1.15
(4) West Bengal	31,880	0.12
(5) Maharashtra	7,812	0.01
(6) Andhra Pradesh	1,433	Negligible
(7) Uttar Pradesh	Negligible	Negligible

Note :— (i) Orissa has indicated an output of 40,000 kahans of 1600 cocoons which on conversion into kahans of 1280 cocoons come to 50,000 kahans.

(ii) Madhya Pradesh has stated that the output of 30,000 kahans includes 10,000 kahans of native grown cocoons.

The Committee is of the view that the estimates of production of cocoons given by West Bengal and Maharashtra are rather on the high side.

Production of Tasar Silk Waste in India

3.3.2. India produced 1,47,539 kg. of tasar silk waste in 1964 as per details below:—

Table-III

State	Production of tasar silk waste in kg.
Bihar	55,000
Orissa	5,500
Madhya Pradesh	60,000
West Bengal	26,196
Maharashtra	524
Andhra Pradesh	309
Uttar Pradesh	10
	1,47,539

As the present export demand is mostly for coarse tasar fabrics, production of tasar silk waste is of considerable importance.

Tasar Culture in India

3.4. To perceive the problems of tasar industry in their proper perspective, it is necessary to have a clear picture of the present rearing practices.

3.4.1. The Indian tasar silkworms are reared exclusively in the open in forest areas where the host plants abound. The only attention bestowed on the silkworms is at the time of preparation of eggs, transference of lervae from tree to tree to ensure adequate feed and at the harvest of cocoons. Human care is also necessary to guard against the predators which often attack the larvae at various stages of growth. It is this peculiar feature of tasar culture which exposes the tasar worms to the vagaries of weather and natural enemies and introduces an element of uncertanity in harvests. This is one of the weak spots of the industry which calls for attention.

3.4.2. Unlike **Bombyx mori** (mulberry silkworm) worms of **A. mylitta**, the main variety of tasar reared in India, are very big, weighing at maturity upto 50 gms. with a larval period of 40 to 50 days. The worms display different degrees of voltinism from uni to multi. There is also polymorphism in colour in the adult. The whole life cycle, i.e. egg, larva, cocoon and moth lasts for 2 to 2½ months. Usually the larvae of **A. mylitta** are green in colour but the Central Tasar Research Station, Ranchi has successfully isolated some olive green, yellow and blue strains which are reported to be breeding true. According to the season of rearing, crop, colour of cocoons etc., the tasar cocoons assume several local names. Season-wise one may recognise 4 distinct crops in Bihar i.e., Ampatia (July-August); Barsati (September-October); Bogai (January-February) and Mudia (April-May).

3.4.3. Variety-wise one distinguishes several types as listed below:—

Table-IV

	Local name of races.	State	Voltinism	Rearing period.	Food plant.	Rearing altitude.
1)	Ampatia	Bihar	Bivoltine	July/Aug.	Terminalia	500–1000 ft.
2)	Daba	,,	,,	Oct/Nov.	,,	,,
3)	Moonga	,,	Bi/Tri	Aug/Sept.	,,	,,
4)	Sarihan	,,	,,	Nov/Dec.	,,	,,
5)	Laria	,,	Bivoltine	Oct/Nov.	Terminalia Shorea	,,
6)	Barharwa	,,	,,	July/Sept.	Shorea	,,
7)	Mugia	,,	,,	July/Aug/Sept.	,,	,,
8)	Modia	,,	Bi/Tri.	Aug/Sept.	,,	,,
9)	Laria	Madhya Pradesh	Tri/Tetra.	July/Aug.	Terminalia	,,
10)	Raily	,,	Uni/Bi	Nov/Dec.	Shorea	1500 & above.
11)	Modal	Orissa	Un/Bi	Sept/Oct.	Shorea	,,
12)	Nalia	,,	Un/Bi	Sept/Oct.	Shorea	,,
13)	Bhandara	Maharashtra	Tri/Tetra.	N. A.	Terminalia	,,

Tasar Rearing

3.5. A brief description of tasar rearing is given below:—

Seed Procurement

3.5.1. The departmental supplies of disease free eggs being rather limited, seed procurement becomes an exercise which calls for considerable experience and traditional skill in selection. One may distinguish two types of seed cocoons here — (i) the wild seed cocoons which are nature grown in the jungles and (ii) seed cocoons raised during "Ampatia" crop or the "Daba" crop of the previous year. It is the general experience among the tasar rearers that cocoons raised on sal trees **(Shorea robusta)** are the best. Tasar rearers are known to travel long distances and far off places of tasar rearings in search of good seed cocoons, thus indicating another weak spot of the industry viz., the lack of good seed. It is said that many a time rearers of Bihar go to Mayurbhanj area of Orissa for procuring reliable seed cocoons. In view of the difficulties to secure seed cocoons the tasar rearers often retain seed cocoons. In view of the difficulties to secure seed cocoons the tasar rearers often retain 1 to 2 pans (80 - 160 cocoons) for seed purposes from their harvests.

3.5.2. The seed production technique of the tribal rearer is very simple. The female moths on emergence are tied to a bamboo pole which is kept outside the house. In the night the male moths from the neighbouring area mate with the female moths tied to the bamboo poles. It will be evident that this process automatically ensures avoidance of 'sib' matings and introduces an element of heterosis through crossing of dissimilar strains and races of different regions. The comparative success of seed prepared by the tribal rearers may to a certain extent be ascribed to this phenomenon.

3.5.3. The State Departments however have set up a number of seed stations and sub-stations where disease free tasar eggs are prepared in a scientific way. In this case the moths are allowed to emerge in a spacious room where there is sufficient light and ventilation and later the months are left in a wire mesh cage or room where they mate at night. In the following afternoon, the pairs are separated and the male moths are allowed to fly away. Each female moth is kept confined to a small bamboo basket (mowni) where it lays about 150 - 250 eggs in two or three nights. The female moths are microscopically examined to detect the presence of pebrine, if any, and freedom of eggs from incidence of this disease is ensured. Despite this proved advantage, it has to be stated that controlled mating does introduce the element of inbreeding depression and there appears to be a fear among the tribal rearers that the departmental seed does not give stable crops.

Tasar eggs are whitish brown, flattened and oval in shape. About 110 eggs weigh one gram. In summer the eggs hatch on 9th or 10th day after oviposition while in winter they take about 15 - 20 days to hatch. The eggs are cleaned by the adivasis according to their traditional methods. After the cleaning, the eggs are kept in leaf-cups. Just before hatching the leaf-cups are tied to the leaves of the food plants on which rearings are to be conducted. The leaf-cups are removed from the tree on the 4th or 5th day or when the hatching is completed. The newly hatched larvae are just like ants, brownish yellow in colour with prominent head and body covered with hair. The worms crawl on to the leaves and start eating leaves. During the young larval stages the larvae aggregate on twigs with tender leaves. Ordinarily after II instar their gregarious habit gradually gets weakened.

3.5.4. The larvae normally hatch in the early mornings between 6 and 10 A.M. The newly hatched larvae show a distinct desire to swollow its own egg-shell or chorion, while the exuviated larva swollows its own cast-off epidermis. Experienced rearers point out that chorion and epidermis intake is a striking sign of a healthy individual. The larvae also display a fondness for water which they drink avidly.

3.5.5. The larval period is characterised by four moults which mark it off into 5 instars. The rearing period is 30 - 35 days in summer (July-August) and 50-60 days in winter. The full grown larva measures about 4" to 5" and weighs 45 - 50 gms. During the course of the rearings the larvae have to be transferred by hand picking from one tree to another as and when the leaves are exhausted on the trees.

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3.5.6 The larvae are very sensitive. A sudden vibration of tree or sound arrests their movement and stops their eating. A full grown worm is also very active in seeking the best place to spin its cocoon. At first it spins a supporting loop of silk on two or three leaves among which the cocoon is constructed. As soon as the shell of the rudimentary cocoon is formed it climbs out through a small hole previously provided by itself at one end of the cocoon and crawls up along the twig to build a hinged portion of the cocoon, then finds its way back into the cocoon to continue spinning.

3.5.7. The worm takes about 3 days to complete its spinning. The most appropriate time to collect cocoons is about 7 days after spinning. The preferable time for collection of cocoons is 8 - 10 A.M. and after 3 P.M.

Hazards of Tasar Rearing

3.6.1. As already mentioned, tasar rearing is a precarious calling, the success of which depends to a great extent on the vagaries of weather during the progress of rearings. A prolonged drought and a heavy rain or sudden gusts of wind are equally disastrous to the tasar brood.

3.6.2. The tasar worm has also a large number of enemies among which the wasp takes a heavy toll. Similarly spiders eat the larvae especially in the younger stages. Praying mantes is also a natural enemy of tasar. Then there are ants. Among the birds the crows and sparrows account for a large loss of tasar worms. The tasar silkworms are also susceptible to a number of diseases chief among which are pebrine, grasserie and flacherie. The latter two diseases break out on account of breeding on improper leaf.

3.6.3. All the factors detailed above reduce tasar rearings to an extremely hazardous occupation which calls for an unremitting toil to guard the tasar worms against the enemies and thus ensure a reasonable harvest. Despite the best care at present the average yield of cocoons per laying is hardly 50 cocoons. The marginal returns that the industry provides are too meagre to tempt men of moderate means into this avocation. The harvests normally range from 2 to 2½ kahans of cocoons per rearer.

Marketing of Tasar Cocoons

3.7. It was mentioned above that the hazards of tasar rearing are so numerous and insurmountable as to reduce the harvests of cocoons to 50 cocoons per DFL. The effective monetary return to the tribal rearer is further reduced by the most irrational marketing arrangements at present. The Mahajan with his capacity for ready credit to the ever needy tribal rearer exerts a stranglehold on the cocoon producer by advancing money and binding the rearers to sell the produce at greatly unremunerative prices. This institution of "Mahajan" has been menacing the orderly progress of this poor man's industry for decades. The Sericultural Departments in the tasar States have no doubt been seized of this problem of the tasar industry and have tried to solve the same by setting up marketing organizations. But by and large the effect of these efforts have been rather marginal due to the inadequacy of funds to handle large scale purchases of cocoons. In Orissa State the co-operative set-up has been fairly successful in eliminating the usurious Mahajan but efforts in Bihar in this direction appear to have been unsuccessful. In the opinion of the Committee marketng is the weakest link in the tasar industry as organised at present and deserves the most immediate attention of the State and Central Governments.

Exports of Tasar Fabrics

3.8.1. Tasar culture — an unknown tribal craft has of late acquired the status of an export industry earning valuable foreign exchange for the country more especially the dollars from the U.S.A. Indian tasar fabrics, particularly the coarser varieties, have enjoyed an expanding export demand during the past seven years as would be evident from the figures ii table-V. With the signing of the Indo-U.S. agreement in 1958 governing the export of tasar fabrics to the U.S., a progressively flourishing export trade in tasar was initiated. Till 1964, the exports showed a marked tendency to look up except in 1962 when there was a marginal fall by about a lakh of rupees. The export trend during 1965 was rather erratic which is ascribed to the reported emergence of Hong Kong as an exporter of tasar fabrics to the U.S.A. Details of exports of tasar fabrics since 1958 are furnished below:—

Table-V

Year	Exports (in lakhs of metres)	Value in lakhs of rupees.	Exports to the U.S.A. (in lakhs of rupees).
1958	0.24	3.12	3.12
1959	0.79	8.70	8.70
1960	1.61	21.70	21.70
1961	2.81	37.22	32.39
1962	2.34	36.37	28.00
1963	4.99	64.29	43.99
1964	6.41	84.45	60.51
1965	5.48	71.87	55.95

Statements indicating the country-wise exports of tasar fabrics in 1964 and 1965 are placed at Appendix-II. It would be clear therefrom that the U.S.A. has been accounting for nearly 75% of our total exports of tasar fabrics.

3.8.2. An export assistance scheme is under operation at present which entitles the exporters of tasar silk fabrics to get an import licence to a value of 10% of the F.O.B. value of exports. Besides a cash assistance of 15% of F.O.B. value of exports with effect from 1-10-1965 has also been announced on 25th January, 1966. The items covered by the licence at present are dyes and chemicals upto 5% and raw silk and machinery parts 5%. Despite the export assistance, Indian tasar would appear to be facing stiff competition from Hong Kong. The Committee was informed that Hong Kong was able to secure cheap tasar silk from the mainland of China, process it locally and export the same to the U.S.A. and other consuming countries with the lable of local production. Besides, the U.S.A. also would seem to have successfully produced a fabric locally with a "tasar look". These two factors have considerably affected India's exports of tasar fabrics during the later half of 1965 year as could be seen from the following figures:—

Table-VI

	Exports of tasar fabrics (in lakhs of rupees)	
	1964	1965
January	7.04	7.77
February	5.41	9.74
March	5.72	9.10
April	3.90	6.68
May	4.67	6.24
June	6.24	5.09
July	8.70	6.99
August	7.26	4.95
September	6.62	3.59
October	7.94	2.64
November	7.26	4.27
December	13.69	4.81
Total :	84.45	71.87

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It will be seen from the above that the exports of tasar fabrics during the second half of 1965 were only Rs. 27.25 lakhs as against Rs. 51.47 lakhs of the preceding year. The setback in export performance is rather disturbing and merits careful consideration of the State and Central Governments so that further deterioration could be effectively stemmed by timely adoption of palliative measures.

3.8.3. It is to be mentioned here that it is the export trade which has generally tended to boost the prices for tasar products. If the exports should sag, as has happened recently, it will have serious repercussion on tasar prices which may dip below unremunerative levels and thus upset the entire economic structure of the industry.

3.8.4. There is thus an urgent need to ensure the tone of our tasar exports, if need be by enhanced export assistance. In short, exports are the very life blood of tasar industry and exert a tranquillizing effect on its economics shiphoning off a sizeable portion of production at higher levels of prices.

Trend of Prices for Tasar Products

3.9.1. It has been mentioned already that the export demand for tasar fabrics has been a major determinant of prices for tasar products. Prior to 1955, Indian tasar fabrics enjoyed a good market in the U.S.A. which has always been the chief importer of these fabrics. In 1955, fearing that these fabrics may be made out of yarn imported from China with which the U.S.A. has been on unfriendly terms, the U.S.A. banned the imports of tasar fabrics from India altogether. After protracted negotiations covering a period of three years, the Government of the U.S.A. lifted the ban and permitted the import of Indian tasars subject to their being accompanied by a "certificate of origin" issued by the Textile Commissioner to the Government of India. During the period 1955 to 1958 the exports of tasar fabrics were negligible. It would be interesting to find out how the tasar prices reacted to this slump in export performance. Precise data are not available but we have it on record that tasar silk which was being sold at Rs. 24|- per lb. prior to the ban registered a fall in price to Rs. 15|- per lb. after the ban was imposed.

3.9.2. The lifting of the ban by the U.S. Government in 1958 gave a spurt to the export trade and the tasar prices began to look up. The tasar exports which were only of the value of Rs. 3.12 lakhs in 1958 reached Rs. 37.22 lakhs in 1961 — a twelve fold increase. However the sudden demand for tasar fabrics resulted in the export of substandard fabrics and complaints started coming in. As a result, the exports sagged in 1962 to Rs. 36.37 lakhs. The subsequent two years witnessed a boom period for tasar exports which reached the peak in 1964.

3.9.3. The price for daba cocoons which was about Rs. 33|- per kahan in 1958 gradually rose to rule at Rs. 155|- by the end of 1961 due to the unprecedented demand for tasar fabrics for export purposes. In 1962 when the exports dipped there was a fall in prices from Rs. 155|- to Rs. 80|- per kahan. The subsequent period witnessed an abnormal price hike reaching a level of Rs. 190|- per kahan in March, 1965. Then came the fall in tasar exports from July 1965 onwards. The Committee was informed that the fall in exports in recent months has led to the manifestation of distinctly bearish tendencies in the tasar markets and currently the daba cocoons were fetching a price of Rs. 70|- to Rs. 80|- per kahan (1280 cocoons). In the case of Madhya Pradesh it was reported that the fall in prices had been so steep for the recent crop which is coming to the markets that the Government has announced a purchase price of Rs. 50|- per 1000 cocoons (or Rs. 63|- per kahan of 1280 cocoons).

3.9.4. The trend of tasar prices since 1958 is given in the table below:

Bhagalpur Market

Table-VII

Year	Tasar Reeling Cocoons (Rs. per kahan) Daba	Bogai	Hand Spun Tasar Silk Yarn. (Rs. per kg.)
(1)	(2)	(3)	(4)
1958	33 to 58	33 to 68	8.80 to 30.80
1959	36 to 60	32 to 60	8.80 to 33.80
1960	60 to 64	39 to 88	11.00 to 38.50
1961	96 to 155	85 to 120	26.40 to 48.50
1962	80 to 132	50 to 120	30.00 to 48.00
1963	81.33 to 95.44	76.83 to 98.58	31.67 to 40.08
1964	119.25 to 129.64	117.56 to 121.11	33.66 to 39.49
1965 :			
January	125	126	33 to 83
February	125	126	33 to 83
March	190	155	33 to 83
April	160	N.A.	33 to 83
May	160	N.A.	33 to 83
June	155-165	N.A.	33 to 83
July	140-150	N.A.	33 to 83
August	140-150	N.A.	33 to 83

Year	Tasar Reeling Cocoons (Rs. per kahan) Daba	Bogai	Hand Spun Tasar Silk Yarn. (Rs. per kg.)
(1)	(2)	(3)	(4)
September	140-150	N.A.	33 to 83
October	140-150	N.A.	33 to 83
November	N.A.	N.A.	33 to 64
December	74-80	N.A.	33 to 50
1966 :			
January	80-90	N.A.	25 to 45

The above would illustrate the point that the tasar market in the country is very sensitive to export demand.

Future Scope for Tasar Exports

3.10.1. Elsewhere in this report we have stated that the production of tasar reeled yarn in the country in 1964 was of the order of 2.24 lakhs of kg. Besides, a quantity of 1.47 lakhs of kg. of tasar waste was also available for spinning of tasar yarn. On the above basis the quantity of tasar fabrics produced in 1964 could be estimated at 24 lakhs of metres as follows:—

Production in 1964 :

Reeled yarn	— 2.24 lakhs of kg.
Spun yarn (80 % of 1.47 lakhs of kg. of tasar waste)	— 1.18 lakhs of kg.
Total	— **3.42 lakhs of kg.**
Total production of tasar fabrics at 7 metres per kg. of yarn.	— 3.42 x 7 — 23.94 or say 24 lakhs of metres.

Note : The exported fabrics also have either matka or noil as one of the components which latter comes from the mulbery sector. So it can be safely assumed that the total production of pure tasar and mixed tasar fabrics wi l be much higher than the figure of 24 lakhs of metres indicated above.

3.10.2. Reference is invited to Table-V wherein the figure of tasar exports since 1958 have been furnished. The average for the past three years will work out to 5.63 lakhs of metres as follows:—

Year		Quantity exported in lakhs of metres
1963		4.99
1964		6.41
1965		5.48
	Total :	16.88
	Average :	5.63

3.10.3. Thus the exports have accounted for less than 25 % of the total output of tasar fabrics in the country during the past three years when the exports were at their peak levels. Despite this fact, the export demand has influenced the prices for tasar products to a considerable extent. It is therefore clear that if the tasar prices are to be stabilised, tasar exports should be maintained at the highest possible levels by additional measures of export assistance, if necessary.

3.10.4. Having established the important role played by exports as a price-prop for products of tasar industry, the Committee also examined the scope for tasar exports in future. The II Working Group on Sericulture has opined that having regard to the built-in limitations of this industry and its marginal monetary returns, the production of tasar silk at the end of the IV Five Year Plan could be expected to reach about 3.50 lakhs of kg. This would result in an output of about 2.40 lakhs kg. of tasar silk waste. The total availability of raw material (both reeled and spun yarn) will be 5.42 lakhs of kg. as follows:—

	(In lakhs of kg.)
Reeled yarn.	3.50
Spun yarn (80% of 2.40 lakhs).	1.92
Total :	5.42

On the basis of 7 metres per kg. of yarn, this would ensure an output of 37.94 lakhs of metres or say 38 lakhs of metres. If the present ratio of internal demand and exports should be maintained, the exports might reach a figure of 10 lakhs of metres at the end of 1970 to earn a foreign exchange of Rs. 120 to 130 lakhs at the most.

3.10.5. The Committee have advisedly indicated a limit of 10 lakhs of metres for the following reasons:—

(1) In the coming years the competition from Hong Kong is bound to mount up and despite any additional export assistance the export of Indian tasar is likely to be hampered by the developing threat.

(2) Already there is the "imitation tasar" in the market and it is not yet clear if pure tasar could stand the challenges of this new fabric-type.

(3) The main bottleneck in the export supplies is limitation stemming from the handloom pattern of production. Even the leading exporters find it extremely difficult to meet at short notice demands in the ranges above 1000 metres. Besides, the fashion trends being unpredictable, exporters are hesitant to resort to large scale manufacture or stock piling of any particular fabric-type.

Preshipment Quality Inspection for Tasar Fabrics Intended for Export

3.11.1. It was mentioned earlier that one of the causes for the set-back in tasar exports in 1962 was the export of sub-standard fabrics which to a considerable extent shattered the confidence of importers abroad. The Central Silk Board has been seized of this problem and a Sub-Committee was set up by the Board in December, 1962 to formulate suitable standards for quality inspection of tasar fabrics intended for export. As a result of these efforts a pre-shipment quality inspection scheme was ushered in by the Board on 2nd January, 1965. The Committee was informed that the scope of this scheme was further enlarged in the light of experience gained during an year of operation of this scheme and a fresh set of 56 standards had since been formulated. It was further learnt that these standards cover almost the entire gamut of tasar fabrics exported at present. There is also provision in the scheme to include other varieties provided the same are got approved in time by the Appeal Committee of the Central Silk Board.

3.11.2. The Committee feels that this is a step in the right direction and should enable the country to put her tasar exports on sounder basis so that its orderly expansion could be ensured. If anything there is a case for progressive reduction in the flexibility of this scheme so that export of tasar fabrics of poor quality might be effectively curbed.

CHAPTER — IV

Development of Tasar Industry through Plans:-

I Five Year Plan.

4.1. During the I Five Year Plan, the Central Silk Board had approved only 9 schemes for development of tasar silk industry and had sanctioned a central assistance amounting to Rs. 2.74 lakhs. The schemes related to establishment of tasar seed supply stations, organisation of demonstration-cum-production and training centres. As against a total grant of Rs. 56.88 lakhs for the development of silk industry during the First Five-Year Plan, the provision of Rs. 2.74 lakhs for tasar would appear to be rather inadequate and more so because the institutional set up for tasar industry had to be started from scratch.

4.2. II Five-Year Plan

4.2.1. During the II Five-Year Plan, 35 schemes involving a central assistance of Rs. 28.65 lakhs were approved. As against the total central assistance of Rs. 253.33 lakhs for the II Plan, this provision of Rs. 28.65 lakhs for tasar would seem to indicate generally a greater attention to this sector during the II Plan. The expenditure during the II Plan was Rs. 17.63 lakhs representing about 61.5% of the total provision. The schemes related to establishment of new seed supply stations, sub-stations, training,-cum-production centres, organisation of tasar rearers' co-operatives and markets and supply of improved reeling and spinning appliances.

4.2.2. Regarding the tasar schemes under implementation during the II Five-Year Plan, it will perhaps be appropriate to recall the comments of the First Working Group which run as follows:
(12.10 of the Report).

> "The States where rearing of tasar is practised do not have farms or nurseries for raising the food plants. This work is undertaken by the respective Forest Departments. The Group understands that no systematic experiments have been undertaken so far for ascertaining the most suitable varieties. There seems to be no working plan for fresh plantations with the result that the trees are scattered at distant places, not easily accessible to rearers. Farms and nurseries might be established in Bihar, Orissa and Madhya Pradesh for the propagation and supply of saplings for plantations."

By and large this recommendation of the First Working Group has gone unimplemented as will be evident from the observations of the II Working Group in 1964. The following are its findings (3.2.2. of the Report)—

> "In the case of tasar food plants no measures seem to have been initiated to introduce cultural operations to ensure their upkeep. Action taken on the recommendation that farms and nurseries should be established for preparation and supply of saplings of food plants of tasar would largely appear to be marginal. In the light of the current thinking in this regard, a more rational approach to the question would be to develop compact blocks in the existing forests in consultation with the State Forest Departments."

4.2.3. A statement showing the schemes under progress in the Tasar States for development of tasar industry during the II Five-Year Plan is placed at Appendix-III. An abstract of the same is given below:—

Table-VIII

State	No. of schemes approved	Central assistance recommended	Expenditure incurred out of the central assistance
		Rs.	Rs.
Andhra Pradesh	6	1,74,445	1,49,333
Assam	1	51,509	58,256
Bihar	13	16,18,830	10,67,012
Madhya Pradesh	3	62,148	62,804
Maharashtra	1	89,890	58,564
Orissa	9	6,52,010	3,10,410
West Bengal	2	2,16,395	56,774
Total :	35	28,65,227	17,63,153

4.2.4. A perusal of the schemes under implementation during the II Five Year Plan reveals that the accent was mainly on generating increased capacity to meet the seed requirements. There were also some efforts to tackle the marketing aspects and also an attempt to set up co-operative organisations. Besides, introduction of improved reeling and spinning techniques was also tried. But the fact remains that the host-plant sector was totally neglected despite clear recommendations of the I Working Group as also the Non-Mulberry Sub-Committee. This is rather disappointing.

4.3. III Five Year Plan

4.3.1. Planning Commission had approved an allocation of Rs. 553.76 lakhs for development of sericulture industry during the III Five Year Plan. Of this, the seven Tasar States were given an allocation of Rs. 225.05 lakhs. The actual provision for development of tasar industry alone during the III Five Year Plan was Rs. 90.53 lakhs. The State-wise allocations as also yearwise utilisation of funds are given in Appendix-IV. Details were available for utilisation of provision till September, 1965. It will be observed therefrom that a sum of Rs. 40.51 lakhs has been utilised by the States till 30th September, 1965. The provision of 16.3% of the total allocation for sericulture industry during the III Plan for development of tasar sector would seem to indicate that by and large the Tasar States had appreciated the need to put their development plans on sounder basis compared to the II Five Year Plan. A more correct picture of this line of thinking on the part of the States will be evident from the following:—

States	Total Plan Provision	Provision for Tasar Industry
	(In lakhs	of rupees)
1. Bihar	60.00	44.07
2. Madhya Pradesh	23.80	19.90
3. Orissa	12.00	10.94
Total	95.80	74.91

A review of the progress of schemes in the tasar States is given below:—

Bihar

4.3.2. Planning Commission had approved an allocation of Rs. 60 lakhs for development of sericulture industry in Bihar during the III Five Year Plan. The State proposed 15 schemes for development of tasar industry at an estimated cost of Rs. 44.07 lakhs as follows:—

S. No.	Title of the scheme	Estimated cost (Rupees in lakhs)
(a)	**Seed Supply**	
1.	Establishment of 7 tasar seed supply stations.	9.03
2.	Establishment of 20 tasar seed supply sub-stations.	7.97
3.	Augmenting production of disease-free layings of tasar in the existing seed stations and training-cum-production centres.	0.66
(b)	**Training & Marketing**	
4.	Establishment of 10 training-cum-production centres.	4.50
5.	Introduction of tasar industry as basic craft in schools.	0.96
6.	Training of additional staff.	0.61
7.	Organisation of 60 tasar rearers' co-operative societies.	3.48
8.	Provision of staff and equipment for tasar rearers' co-operative societies.	0.89
9.	Marketing organisation for purchase of tasar cocoons.	1.79
10.	Organisation of retail distribution centres.	0.33
(c)	**Miscellaneous**	
11.	Provision of staff quarters.	3.20
12.	Publication of Books and Periodicals.	0.45
13.	Appointment of supervisory staff.	1.61
14.	Pilot Project for tasar	3.98
(d)	**Reeling**	
15.	Establishment of two training centres in improved reeling.	4.61
	Tolal	44.07

It will be evident from the list above that Bihar has not drawn up any scheme even during the III Plan for tackling the host-plant requirements of tasar rearings. No doubt, sufficient attention has been bestowed on the seed organisation. Even marketing aspects also seem to have been looked into. Brief comments on the progress of schemes in the different sectors are given below :

Seed Sector

4.3.2.1. At the beginning of the III Plan there were 9 seed supply stations and 20 sub-stations. During the current Plan 6 more stations (as against 7 proposed) and 15 sub-stations (as against 20 proposed) have been established. These stations are intended to procure seed cocoons from the rearers, prepare dfls., and supply the same free of cost to the rearers. Besides, these stations also engage themselves in demonstrating improved techniques of reeling and spinning to the rearers in the off season and of rearing during the season.

The capacity of each station is to produce 10,000 dfls. annually while the sub-station has a capacity to produce 5000 dfls. per year. The quantities of dfls. produced by these units during the years 1964-65 and 1965-66 are given below:—

Units	Capacity	Production of dfls. 1964-65	1965-66
15 Seed Stations	1,72,000	1,35,190	1,66,139
35 Sub-Stations	1,75,000	1,49,505	2,01,524
Total :	3,47,000	2,84,695	3,67,663

On the basis of the production of 1,13,000 kahans of cocoons in 1965, the total requirement of dfls. for the State could be estimated at 28.25 lakhs. Despite improvement effected in the quantum of output of examined seed in 1965-66 as against the previous year, the production of 3.67 lakhs of dfls. (or 13%) against an estimated requirment of 28.25 lakhs of dfls. cannot be deemed satisfactory.

Besides the above, under the short term programme a scheme to expand the activities of the seed stations|sub-stations and training-cum-production centres costing Rs. 0.66 lakhs was approved in 1962-63 with the object of increasing the production of cocoons by 6,500 kahans. Against Rs. 56,000 utilised in 1964-65 under this scheme, during the current year no expenditure has been incurred, lthough the provision is reported to have been sub-allotted to the local officers for the purchase of cocoons.

Training-Cum-Production Centres

4.3.2.2. Envisaging an outlay of Rs. 4.50 lakhs for the III Plan period, this is an important scheme of the State, which has for its objective the training of tribal rearers in improved techniques of reeling and spinning. As against 10 centres contemplated for the III Plan, 7 had been established till 1964-65 while the remaining have been started in 1965-66. These are peripatetic in nature. So far 1051 rearers have been trained in the 7 centres started during the current Plan and 5 centres established during the II Plan. In each centre there is provision for training 15 sericulturists in one session of 6 months duration. Each trainee is given a stipend of Rs. 15|- per month.

Each training-cum-production unit is provided with 4, four-spindle reeling-cum-twisting machines and eight spinning machines. The staff for each centre consists of 2 overseers, 2 reeler-cum-spinners and 1 peon-cum-chowkidar. In the non-Plan schemes, the training-cum-production centres are under the charge of Senior Inspectors. The training-cum-production centres are indeed very useful foci of activity. However, it appears to us that the period of training could be considerably reduced from its present duration of 6 months to 3 months. Besides, the Committee feels that the training-cum-production centres should be completely peripatetic so that the training programme could be brought to the very homes of the tribal rearers. It is doubtful if the present method of training attracts the right type of persons. In the result the training programme is likely to remain infructuous in so far as the principal objective of the scheme is concerned.

Introduction of Tasar Industry as Basic Craft in Schools

4.3.2.3. The scheme which envisaged the intoduction of tasar industry as a basic craft in the schools for educating the children of the rearers in improved techniques of rearing, reeling and spinning is in operation since 1959.

The State Government proposed to continue this scheme during the current plan also with a total outlay of Rs. 0.96 lakhs. The students from Class IV to Class VII are trained in all the operations of the tasar industry. A sericulture teacher is provided by the Industries Department (Sericulture Section).

By the end of 1964-65, 1076 students were under training in 3 schools in Chotanagpur Division. The scheme has been recently introduced in basic schools at Parakola and Banjhi in Santhal Paraganas.

No expenditure has been incurred for the implementation of this scheme during the first three years of the current Plan. The expenditure incurred during 1964-65 and 1965-66 is given below:—

(Rs. in lakhs)

Year	Estimated cost	Expenditure
1964-65	0.25	0.069
1965-66	0.34	0.047 (upto September)

Co-operatives in Tasar Industry

4.3.2.4. There are two shemese which have for their objective the tackling of marketing aspects of tasar industry through co-operative organisations. During the II Plan, 15 co-operative societies had been organised while the current plan envisaged the setting up of 60 societies with 100 members each. The total provision for this scheme for the III Plan was Rs. 3.48 lakhs. Each member was to be provided with loan to enable him to pay a share capital of Rs. 20|- and working capital of Rs. 50|-.

A statement showing the details of the Co-operative Societies is attached as Appendix-V. The Committee regrets to note that the objectives of the Department have largely remained unfulfilled despite the efforts to get 4 Inspectors trained in "co-operation". The sanctioned amount for 11 co-operatives for the III Plan has been drawn in 1964-65 and deposited with the Central Co-operative Bank in 4 districts. Loan applications were reportedly being collected during the current year.

The second scheme under this sector seeks to provide equipments to the tasar rearers' co-operative societies. An expenditure of Rs. 0,273 lakhs was reported to have been incurred till September, 1965 as against a total provision of Rs. 0.89 lakhs.

By and large the co-operatives in Bihar have proved a failure. The Committee feels that the "Mahajans" in Bihar are strongly entrenched and have been exerting sufficient influence on the tribal rearers to prevent their entry into co-operative organisations. The Committee is of the view that the Department should revitalise the societies and expand their scope of utility so that more rearers might be tempted to join as members.

Marketing

4.3.2.5. There are two schemes in this sector. One is for setting up of marketing organisation for purchase of tasar cocoons. Two marketing organisations — one at Chaibasa (Singhbhum District) and the other at Amarapara (Santhal Paraganas) were established during the II Plan with working capitals of Rs. 1.32 lakhs and Rs. 1.50 lakhs respectively.

During the current Plan, a provision of Rs. 1.79 lakhs has been made for organising the tasar marketing organisation. A marketing organisation has recently been set up at Bengabad with a working capital of Rs. 0.50 lakhs. One Business Manager with necessary ministerial staff has been provided to each organisation. One Jeep with trailer has also been provided to each of the marketing organisations at Chaibasa and Amarapara.

It has been reported that a total quantity of about 4,400 kahans of cocoons was purchased by these marketing organisations from 1960. Details are given below;—

Table - IX

A. Marketing organisation, Chaibasa.

(Non-plan)

Year	Quantity Purchased				Quantity Sold			
	Kahans	Pans	Gondas	Value Rs.	Kahans	Pans	Gondas	Value Rs.
1960-61	72	13	12	4,852.85	71	11	1	5,607.73
1961-62	232	4	3	15,331.40	216	3	5	16,307.54
1962-63	668	5	8	40,552.55	665	0	13½	45,381.07
1963-64	212	9	15½	16,578.10	212	3	8½	20,134.10
1964-65	645	4	7½	63,505.57	378	15	9½	40,931.87
1965-66 (upto Sept. 65)	282	13	17	23,246.95	52	15	7	7,241.64
TOTAL:	2114	3	3	1,64,067.42	1597	1	4½	1,35,603.95

Table - X

B. Marketing organisation, Amarapara.

Year	Quantity Purchased				Quantity Sold			
	Kahans	Pans	Gondas	Value Rs.	Kahans	Pans	Gondas	Value Rs.
1960-61	293	6	0	9,803.38	292	11	10	11,231.02
1961-62	553	7	0	19,737.00	209	0	18	9,053.49
1962-63	326	8	0	9,795.00	671	8	12	24,717.52
1963-64	208	5	5	9,938.92	202	9	5	10,636.15
1964-65	584	6	5	23,205.06	3	9	8	269.13
1965-66 (upto 30th Sept. '65)	277	10	10	15,575.75	-	-	-	-
TOTAL:	2243	11	0	88,055.11	1379	7	13	55,907.31

The tasar marketing organisation at Bengabad was organised in 1963-64 and transacted tasar cocoons worth Rs. 10,487|- during 1964-65. It would be seen from the transaction of the markets in 1964-65 that hardly a quantity of 1400 kahans of cocoons representing 1.2 % of the total production of 1,13,000 kahans was purchased. This clearly shows that the impact of the State's scheme to tackle the problems of marketing has been negligible.

Scheme for Improving Tasar Reeling

4.3.2.6. A scheme for establishment of peripatetic centres for imparting training to rearers in improved methods of reeling and spinning involving an outlay of Rs. 4.61 lakhs has been initiated during the current Plan. During the year 1961-62, two centres at Bhagya (Santhal Paraganas) and Tantnagar were organised. The centres give training in reeling and spinning to the rearers who are paid stipends of Rs. 30|- per month for a period of six weeks.

During the year 1963-64, 100 each of the 4 spindle reeling-cum-twisting machines and spinning machines were purchased by the Department for distribution to the trained reelers and spinners at 50 % loan and 50 % subsidy.

A total number of 741 persons have been trained in reeling and spinning since the initiation of the scheme. But details in respect of the follow-up action to ensure that the trained person took to reeling and spinning as sources of livelihood does not appear to have been ensured.

Miscellaneous Schemes

4.3.2.7. Under this category, schemes for provision of quarters for staff, publication of books and periodicals, appointment of supervisory staff and pilot project for tasar have been grouped.

Under the scheme for construction of quarters, action has been initiated at Bengabad and Govindpur for having 2 quarters each. Against a provision of Rs. 2 lakhs for 1965-66, an expenditure of Rs. 0.73 lakhs (upto September, 1965) has been reported.

Appointment of Supervisory Staff

A provision of Rs. 1.61 lakhs has been made for strengthening of directional staff. Two posts of Assistant Directors of Industries (Seri.) have been sanctioned though only one post has been filled up. The Assistant Directors of Industries (Seri.) with headquarters at Bhagalpur, Ranchi and Patna have been supervising the development activities.

Pilot Project

A provision of Rs. 3.98 lakhs has been made for organising a Pilot Project for conducting extension work in the village for stepping up the production of tasar cocoons, distribution of dfls., training of persons and marketing of cocoons and yarn.

Two centres at Khuntpani and Kathikund have been organised. At Khuntpani, 2 acres of land have been taken possession of during 1964-65. A building has been rented at Chakradharpur to carry on the activities of the centres covering 50 villages.

In Kathikund, the pilot project centre has been established in a rented building. During 1965-66, a sum of Rs. 25,499|- is reported to have been spent on the scheme till September, 1965.

Publication of Books & Periodicals

A provision of Rs. 45,000|- was made for this scheme in the III Plan of which Rs. 10,000|- have been spent so far. Two bulletins were translated and printed in the Adivasi language 'Ho' and one more bulletin has been published in Hindi.

MADHYA PRADESH

4.3.3. There are 9 schemes under implementation involving an outlay of Rs. 19.90 lakhs as against a total provision of Rs. 23.80 lakhs for development of silk industry in the State during the III Plan. As against this, the expenditure till 30th September, 1965 was reported to be Rs. 14.62 lakhs which is to be deemed quite satisfactory.

Seed Sector

4.3.3.1. There are 5 schemes in this sector of which only two relating to establishment of six tasar seed farms and development of Kosa Silk Industry respectively were under implementation. The other three schemes which were to be initiated under the short-term programme were not put into ground. Thus the seed requirements of the State remained largely unattended.

Establishment of Six Tasar Seed Farms

7 tasar seed farms established at Lailunga, Korba, Baramkela, Khatghora, Udaipur, Jagdalpur and Bhopalpatnam continued the production of seed cocoons. A new seed farm at Chawl was taken up. Construction of building at Khatghora was completed while at other centres it was under progress.

As against a total provision of Rs. 9 lakhs for this scheme, the expenditure till 30th September, 1965 was Rs. 5.55 lakhs.

The total requirement of seed cocoons to produce about 20,000 kahans of cocoons is estimated at 12 lakhs of which 4.52 lakhs cocoons were produced in 1964-65 and 74,000 cocoons in 1965-66 (till September 1965). The State has mentioned that distribution of seed cocoons rather than dfls. is in vogue.

As stated earlier the following 3 schemes under the short-term programme were not initiated by the State:—

Scheme No. 2 — Expansion of seed farm at Gharghoda.
Scheme No. 3 — Procurement of tasar seed cocoons.
Scheme No. 4 — Establishment of two tasar seed farms.
Scheme No. 5 — Development of Kosa Silk Industry (Tasar).

The seed farm established in 1956 at Gharghoda with an area of 15 acres of Asan and Arjun plants continued the production of tasar disease-free seed cocoons for distribution to the rearers free of cost.

The progress during the past 2 years was as follows:—

Year	Output of Seed Cocoons	Output of D.f.ls.
1964-65	0.17 lakhs	Nil
1965-66	0.28 lakhs	0.23 lakhs (till 30-9-1965)

Reeling and Spinning Sector

4.3.3.2. Schemes No. 6 and 7 relate to reeling and spinning of tasar.

Scheme No. 6: Establishment of tasar silk centres at Tamnar and Raigarh

Two tasar silk centres were established at Tamnar and Raigarh in 1950 for purposes of demonstrating the technique of improved reeling. 30 reeling machines were distributed to reelers and 12 candidates were trained in improved methods of reeling in 1963-64. During 1964-65, 20 reeling machines were distributed bringing the total to 50 and 10 ladies were trained raising the total to 22 candidates trained. A co-operative of trained reelers was also organised in 1963-64.

Scheme No. 7: Tasar silk reeling and spinning factory

The tasar reeling and spinning factory established at Bilaspur in 1963 continued to produce reeled and spun yarn of uniform quality for distribution to weavers at reasonable prices for production of tasar fabrics for export. Sanction for the purchase of machinery worth Rs. 25,000|- was received from the State Government. The quantity of tasar silk produced during the past 3 years was as follows:

1963-64	108 kgs.
1964-65	463 ,,
1965-66	820 ,,

Research Sector

Scheme No. 8: Establishment of a field research station at Ambikapur

4.3.3.3. The scheme involves an outlay of Rs. 1 lakh for the current Plan. A sum of Rs. 0.50 lakh is reported to have been spent till 30th September, 1965. The station was established at Ambikapur in 1963-

64 witih a view to take up research work relating to study of tasar food plants, tasar silkworm races and their diseases. During the past 3 years, the station is reported to have conducted some work on purification of tasar strains. The work of this station will have to be coordinated with that of Central Tasar Research Station at Ranchi under Board's control as the problems of research can hardly be tackled in isolation.

Marketing Sector

Scheme No. 9: Establishment of six tasar markets

4.3.3.4. There is no co-operative organisation in the State to tackle the marketing aspect. Instead six Government markets have been established in 1961-62 at Lailunga, Chawl, Korba, Khatghora, Jagdalpur and Geedam. In each season floor price is declared and whenever prices dip below the floor price level, cocoons are purchased at the floor price. Further when cocoons are required for the Government institutions, these markets buy at the market price from the rearers. The marketing organisation has a Personal Deposit Account of Rs. 2.20 lakhs operated by the Senior Technical Expert (Sericulture). A provision of Rs. 5 lakhs was earmarked for the scheme for the III Plan. As against this, a sum of Rs. 5.77 lakhs has been spent till 30th September, 1965.

The quantity of cocoons procured in 1963-64 was about 200 kahans and in 1964-65 about 4900 kahans. During the current year till 30th September, 1965, no transactions have been reported as the crops had not come in yet.

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4.3.4. The total plan provision for development of sericulture during III Five-Year Plan was Rs. 12 lakhs of which a sum of Rs. 10.94 lakhs has been earmarked for 10 tasar schemes. The expenditure reported till 30th September, 1965 was Rs. 8.469 lakhs. Utilisation of provisions is satisfactory.

Seed Sector

4.3.4.1. The supply of seed is in the form of seed cocoons rather than disease-free layings (d.f.ls). The requirement of seed cocoons is 2000 kahans for 10,000 rearers in the co-operative fold. While the total requirement for the State including the rearers outside the co-operative fold is 3,000 kahans, the supply position during the current Plan is reported to be as follows :—

	Supply	
Year	Seed cocoons	D.f.ls.
1960-61	Nil	480
1961-62	500 Kahans	2,283
1962-63	1000 ,,	3,360
1963-64	1200 ,,	7,856
1964-65	1600 ,,	15,856

Three seed stations have been established at Bangiriposi, Kaptipada and Thakurmunda. The capacity of Bangiriposi is 10,000 d.f.ls. per annum while the other two have a capacity of 5000 d.f.ls. each. Thus, against the total capacity of 20,000 d.f.ls. per annum, the production of 15,856 d.f.ls. would appear to be quite satisfactory.

It has been reported that till 30th September, 1965, 2,000 kahans of seed cocoons were procured for the year 1965-66.

Under the short-term programme during 1962-63, a scheme for the establishment of tasar seed sub-stations involving an outlay of Rs. 0.395 lakh was also approved of which Rs. 0.21 lakh was expended. The activities under the scheme have been covered in our description given above.

Reeling and Spinning Sector

Scheme: Establishment of tasar reeling and spinning centre, Nuapatna.

The scheme envisaging the establishment of two centres for demonstration of improved techniques of tasar silk reeling and spinning and involving an outlay of Rs. 1.25 lakhs was initiated in 1962-63. A centre was occordingly established in Nuapatna. Construction of building was progressing. The number of persons employed in reeling of tasar silk on improved appliances and silk produced are given below:—

Year	No. of persons trained	Silk produced in kg.	
		Reeled	Spun
1963-64	300	N.A.	N.A.
1964-65	258	997	370
1965-66	97	65	N.A.

Scheme: Supply of improved appliances

The scheme envisaged an outlay of Rs. 0.20 lakhs for purchase of improved reeling and spinning appliances of tasar silk for demonstration and distribution to the rearers, 7 pedal driven spindles, 50 N.R. Das's spinning machines and 4 reeling-cum-twisting machines were purchased during 1963-64.

The State in its replies to the questionnaire of the Committee has informed that 50 Trivedi reeling machines and 50 automatic pedal driven spinning machines have been purchased and given to societies and spinning centres.

Research Sector

4.3.4.3. There is only one scheme involving an outlay of Rs. 0.70 lakhs. Against this, the reported expenditure is Rs. 1.735 lakhs. Under the scheme, a research unit was established at Bangriposi for tackling local problems of tasar industry. The station has since been shifted to Baripada in view of the facilities the latter offers for field work. A research officer was appointed in 1962-63. Experiments relating to isolation of tasar races, study on density of population per unit area, voltinism etc., have been initiated in 1962-63. Having regard to the peculiarities of the industry, the Committee reiterates that research in tasar should be tackled only by a Central organisation, if need be, with field stations for regional studies. But, the overall direction should emanate only from the Central Station at Ranchi. Efforts in isolation are bound to remain pedestrain and infructuous in research sector of tasar industry.

Marketing and Cooperation

Scheme: Central Tasar Depot

4.3.4.4. The scheme envisaged the continuance of the Central Tasar Depot established in 1959 at Baripada for providing marketing facilities to the rearers during the III Five-Year Plan. The depot continued its activities till 1st September, 1963 when it was converted into Tasar Cooperative Society Ltd. (Apex).

19 tasar rearers' cooperatives are functioning as primaries under the Apex society. The details of transactions made at the society are given below:—

(Qty. — Kahans Value — Rs. in lakhs)

Year	Cocoons purchased		Cocoons sold	
	Qty.	Value	Qty.	Value
1961-62	1,919	2.04	992	1.72
1962-63	3,817	2.24	1,630	1.24
1963-64	N.A.	N..A	1,000	0.86
1964-65	3,266	1.51	2,825	1.85

The scheme relating to 'State Tasar Cooperative Society Ltd.' has been merged with the Central Depot Scheme since 1963.

The Apex society is assuring the rearers a reasonable return by giving them a stable price fixed in a meeting of the representatives of primary and apex socity. The Apex society controls the sale of cocoons of all primary societies.

Scheme: Organisation of tasar rearers co-operative societies.

The scheme envisaged an outlay of Rs. 2.76 lakhs. The expenditure till the end of 1962-63 was Rs. 1.06 lakhs. Subsequently however the activities under the scheme have been merged with those of the scheme relating to 'Central Tasar Depot' and 'State Cooperative Society Ltd.'

The scheme envisaged the organisation of 7 cooperative societies of which 6 have been organised as per details given below:—

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1. Baincha (1961-62).
2. Nuagaon (1962-63).
3. Khansapal (1962-63) Mayurbhanj.
4. Besoi (1962-63).
5. Maidankal (1961-62) Keonjhar.
6. Jhumpura (1962-63).

Miscellaneous

4.3.4.5. Two schemes relate to strengthening of staff for supervision of tasar rearers' co-operative societies and headquarters staff for administration of sericulture respectively. Under the first scheme a Sub-Assistant Registrar and 17 Senior Tasar Assistants were appointed in 1964-65.

Similarly under the second scheme, one Deputy Director, one Assistant Director, two Technical Inspectors besides other ministerial staff have been appointed.

WEST BENGAL

4.3.5. West Bengal ranks fourth among the tasar producing States in India. There is a fairly wide dispersal of the industry in the districts of Purulia, Bankura, Birbhum and Midnapore.

In its replies to the Committee's questionnaire, West Bengal has reported that the present output is 31,880 kahans. The Committee feels that this is a very optimistic estimate in the context of the actual production reported during the past several years. Nevertheless the fact remains that West Bengal has considerable potential for tasar industry and with Calcutta as the principal port of export for tasar fabrics, West Bengal could play a more significant role in the tasar industry.

Schemes for Tasar Development

4.3.5.1. There is only one scheme for tasar sector involving an outlay of Rs. 6.25 lakhs for the III Plan period. The scheme is captioned 'Development of Tasar Industry'.

The scheme is mainly concerned with the supply of disease-free layings. The State has reported that the total requirement of disease free layings is 6 lakhs of which 7.3 % is presently met by the department. The actual position in 1965 was reported to be as follows:—

Requiprement of d.f.ls.	—	6	lakhs
Actual supply by the Department.	—	0.44	„
Actual supply including those produced under the care of the departmental demonstrator.	—	5.12	„

The Commitee feels that the estimate of 6 lakhs of d.f.ls. is rather on the high side considering the actual production of cocoons in the State. The State has further reported that the departmental seed is very popular with the tribal rearers due to its better performance. At present there are 2 seed stations — one each in Raghunathpur (Purulia) and Panchmura (Bankura district). The capacity of the station at Purulia is said to be 2.5 lakh dfls. while that of Bankura is 0.5 lakhs. The actual production in 1965 was only 0.44 lakh|dfls. It is not quite clear why the department is not utilisnig its full capacity for production of seed which is reported to be very popular with the rearers.

The centre in Purulia district (Raghunathpur) besides supplying seed free of cost to the rearers, also imparts training in improved methods of rearing, reeling and spinning of tasar silk.

There are no schemes in the reeling and marketing sector. The State has reported that the 4-spindle reeling-cum-twisting machine of Trivedi is not suitable for the reeling purpose due to several mechanical complications. However, 15 improved spinning machines have been introduced.

ANDHRA PRADESH

4.3.6. There is considerable potential for tasar production in this State in the districts of Adilabad, Karimnagar, Khammam, Warangal and Mahaboobnagar. The actual production of tasar cocoons in 1964-65 was 1,430 kahans as against an estimated production of 5,000 kahans.

There are 9 schemes under implementation in the tasar sector involving an outlay of Rs. 8.73 lakhs out of the total provision of Rs. 15 lakhs for the development of sericulture industry in the State during the III Five-Year Plan. The total utilisation of provision till 30th September, 1965 was Rs. 2.815 lakhs which is to be deemed not satisfactory.

Host Plant Sector

4.3.6.1. There are two schemes under this sector. The progress in respect of each is given below:—

Scheme No. 1: Preservation of food plants of tasar silkworms in the forest land taken over from the Forest Department.

Pollarding operation is reported to have been conducted in 170 acres of forest plantation containing tasar food plants. Besides, chemicals were also sprayed to prevent attack of fungus diseases. Three crops were successfully harvested during each year of the

Plan period. Against a total provision of Rs. 0.42 lakhs, the expenditure has been Rs. 0.261 lakhs till 30th September, 1965.

Scheme No. 2: Organisation of a field experimental unit to study the different varieties of food plants of tasar silkworms.

The scheme envisages the establishment of varietal plantation of tasar food plants in the forest area for conducting rearings of tasar silkworm on field scale. It is reported that 10 varieties of host plants, planted in 1961-62 had grown to a height of 5 ft. and would be ready for rearing next season.

Seed Sector

4.3.6.2. Three schemes were under progress as detailed below :—

Scheme No. 1: Establishment of Tasar Seed Station, Chinnoor.

The seed station at Chinnoor continued the production and supply of disease-free seed free of cost to the rearers. Besides, the station imparted training in improved technique of reeling. Construction of reeling shed was completed. Progress made during the Plan period was as follows :—

Year	D.f.ls. Produced
1961-62	N.A.
1962-63	462
1963-64	68,161
1964-65	53,775
1965-66 (Upto Sept. '65)	Nil

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Scheme No. 2: Establishment of tasar seed station with reeling facilities, Kosigi area.

This is a composite scheme envisaging free distribution of disease-free seed, training of reelers and weavers in improved techniques etc. Disease free layings produced are as follows :—

Year	D.f.ls. Produced
1961-62	N.A.
1962-63	13,000
1963-64	9,250
1964-65	8,880
1965-66 (Upto Sept. '65)	2.476

Scheme No. 3: Augmenting the supply of tasar seed to rearers.

The scheme envisaged the procurement and distribution of 1 lakh of seed cocoons for industrial production. Rs. 7,500 have been spent till 1964-65 and 1.25 lakhs of seed cocoons were procured during 1963-64.

Reeling and Spinning Sector

4.3.6.3. The following two schemes were under progress in this sector :—

Scheme No. 1.: Scheme for procurement of tasar cocoons.

The scheme envisaged the purchase of reeling cocoons through the seed stations for production of yarn. Rs. 25,000/- were reported to have been made available for the purchase of 1000 kahans of reeling cocoons during 1964-65.

Scheme No. 2.: For reeling and spinning of tasar silk yarn.

6 traditional reelers were selected for training in improved reeling methods on 4-spindle reeling -cum-twisting machines.

Training

Scheme: Setting up training-cum-production centres for reeling and spinning at Venkatapuram, Venkatapur and Mahadevpur.

4.3.6.4. A centre each has been established at Venkatapuram, Venkatapur and Mahadevpur for imparting training in improved techniques of reeling to traditional reelers.

Sixty persons were trained during 1964-65 and 17 persons were under training during the current year.

There are 55 reeling machines and 25 spinning machines working in the State at present. As against a provision of Rs. 2.40 lakhs for this scheme, the utilisation has been only Rs. 0.854 lakhs till 30-9-1965.

Marketing Sector

Scheme: Establishment of marketing organisation at Chinnoor for tasar cocoons.

4.3.6.5. There is only one scheme in this sector involving an outlay of Rs. 1.25 lakhs. The expenditure so far has been Rs. 0.21 lakhs only

The centre established at Chinnoor continued the purchase of tasar reeling cocoons from the rearers at reasonable rates. A quantity of 60,000 cocoons (about 40 kahans) was transcated during 1964-65.

The State has reported that due to demand for cocoons from the neighbouring States for manufacture of fabrics intended for export, the local weavers do not get their requirements. The State is in favour of a central marketing organisation so that there may be equitable distribution of tasar cocoons to the weaving industry at reasonable prices.

MAHARASHTRA

4.3.7. Tasar industry in Maharashtra is confined to Bhandara and Chandrapur districts where the number of tasar rearers is reported to be 3000. About 30,000 acres of forest area are reported as being utilised at present for tasar rearing.

Maharashtra has reported that the annual requirement of disease free layings is 10 lakhs. The present output of cocoons has been stated to be 100 lakhs or 7812 kahans. The Committee feels that this estimate is rather on the high side. In respect of seed also, the requirement of 10 lakhs of disease free layings indicated is an overestimate. Even assuming that the actual annual production of cocoons is 7812 kahans as stated by Maharashtra, the requirement of d.f.ls. on the basis of 25 d.f.ls. to produce one kahan of cocoons, will come to less than 2 lakhs of d.f.ls.

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Schemes

Only one scheme has been actually approved by the Board during the current Plan for implementation in 1962-63 under the short-term programme. The scheme was titled "Scheme for procurement and distribution of seed cocoons". The State would appear to have spent Rs. 8,100|- during 1963-64 and 1964-65 for the purchase of seed cocoons. For the year 1965-66, a total provision of Rs. 12,200|- had been made for this scheme which included a sum of Rs. 5,000|- for purchase of seed cocoons.

The State has also established a seed station at Armori (Chandrapur district) with a capacity to produce 75,000 disease free layings annually and an equal number of seed cocoons. The total provision for the scheme was Rs. 35,000|- for 1964-65. The production of d.f.ls. was as follows :—

Year	Production of d.f.ls.
1963-64	15,000
1964-65	18,264 + 22,915 seed cocoons.

The Station has now got its own building and has acquired 25 acres of forest area on lease for expanding its activities.

The Station at Armori has a composite programme of activities which include training in improved methods of reeling and spinning also. While the advantages of the 4-spindle reeling-cum-twisting machine of Trivedi Industries have been accepted by the State, difficulties have been expressed for its popularisation due to the high cost of the machine.

There are 5 co-operative societies of tasar rearers in the State for tasar industry as per details given below:—

Table — XI

S. No.	Name of the Society with its location	Capacity	No. of rearers covered	Working capital	Share capital	Quantity transacted	
				Rs.	Rs.	Year	Kahans
1.	Kosa Utpadak Sahakari Sanstha Ltd., Armori, (Dist. Chandrapur).	Maximum Qty. transacted in 1964 is worth Rs. 60,000/-.	314	3,520	2,880	1960 - 1961 - 1962 - 1963 - 1964 -	44 608 663 844 960
2.	Kosa Utpadak Sahakari Sanstha Ltd., Awalgaon, (Dist. Chandrapur).	Maximum Qty. transacted so far is worth Rs. 25,000/-.	74	Nil	640	Figures not available upto 1963. 1964 -	662
3.	Vikas Sahakari Kosa Utpadak Society Ltd., Mategion, (Dist. Chandrapur).	Maximum Qty. transacted so far is worth Rs. 1,000/-.	51	Nil	560	Figures not available upto 1963. 1964 -	16
4.	Dhiwar Kosa Utpadak Sahakari Sanstha Ltd., Nisti, (Dist. Bhandara)	Maximum Qty. transacted is worth Rs. 20,000/-.	39	Nil	2,000	Figures not available upto 1963. 1964 -	241
5.	Kosa Utpadak Sahakari Sanstha Ltd., Tadgaon, (Dist. Bhandara).	Maximum Qty. transacted is worth Rs. 5,000/-.	72	Nil	720	Figures not available upto 1963. 1964 -	84

The State has expressed itself in favour of setting up a marketing corporation under the conjoint auspices of all the Tasar States.

UTTAR PRADESH

4.3.8. Tasar industry is confined to Mirzapur district which adjoins the tasar belt of Bihar and Madhya Pradesh. Only one scheme was under implementation since 1962-63. The scheme is captioned "Pilot Project Scheme in Mirzapur (Tasar)". The total outlay for the III Plan was Rs. 0.39 lakhs of which Rs. 0.305 lakhs have been spent till 30th September, 1965. During 1962-63 and 1963-64, 40 persons were trained in Tasar culture and 11,000 tasar cocoons were produced.

During 1964--65, 662 kg. of tasar cocoons were produced and 20 candidates were trained. During 1965-66, 315 kg. of cocoons were produced.

4.4. Role of Central Silk Board in the Development of Tasar Industry

Sub-Committees on Non-mulberry Silk Industry

4.4.1. Realising the importance of tasar and other non-mulberry silk sectors in the rural economy of the States concerned and with a view to stimulating their growth and development on systematic lines the Central Silk Board had set up a Sub-Committee on non-mulberry silk industry in 1960. The main recommendations of this Sub-Committee in respect of tasar were as follows:—

(i) Cutting down of tasar food plants should be prohibited by legislation.

(ii) In case it was not possible for the State Government to enact a legislation for the entire State, it might endevour to enforce the legislation atleast in such areas where tasar rearings were carried on traditionally.

(iii) State Departments should have a responsible officer having specialised knowledge and training for looking after the development of tasar food plants.

(iv) Experiments should be carried on on different types of tasar food plants in order to find out the best variety suitable for rearing and to suggest the best training method to be adopted for the plants.

(v) Nurseries should be established for raising saplings of best varieties of tasar food plants.

(vi) The State Government should be requested to remove "Dalkatti" and other taxes levied on rearing of tasar in the forests.

(vii) For the proper upkeep of tasar food plants the rearers should have ownership on the plants.

(viii) Utilising grazing lands, waste lands and village commons and propagation of tasar food plants.

(ix) Steps should be taken to set up a Central Tasar Seed Station either at Chaibasa or some other convenient place.

(x) A Sub-Committee be formed to examine the various spinning and reeling appliances at present in use, in each non-mulberry State and to advise on suitable reeling and spinning equipment.

(xi) Marketing of cocoons should be organised on co-operative basis.

(xii) The Board Should take over and organise the Tasar Research Station at Chaibasa.

(xiii) Draft standards for tasar fabrics being exported should be drawn up.

While action on items (ix) and (x) as also (xii) and (xiii) appears to have been taken by the Board, the recommendations (i) to (viii) which mainly related to the host plant have remained unimplemented by the States. This has operated as a set back to the progress of the industry.

Trials on Reeling and Spinning Machines

4.4.2. The Board had constituted an "Expert Committee" in September, 1960 on the recommendation of Non-Mulberry Silk Sub-Committee for examining the various reeling and spinning appliances in use in the different non-mulberry silk producing States and to suggest improvements. Accordingly, the trials on various appliances in vogue were conducted between 18th and 21st July, 1962 at the Government Silk Institute, Bhagalpur. The trials were conjointly supervised by the Assistant Secretary (Technical) of the Board and the

Assistant Director (Seri.), Patna. The report of the trials was considered by the Expert Committee for non-mulberry silk reeling and spinning machines on 30th November, 1962. The Committee recommended the following machines for popularisation on an all-India basis:—

Tasar Reeling:	Four-spindle reeling-cum-twisting machine manufactured by M|s. Trivedi Industries, Ashok, Rajpath, Patna. (Cost Rs. 367|- per piece). Average production per hour of reeling was 27.3 gm.
Tasar Spinning:	Automatic pedal spinning machine of Bihar. (Cost Rs. 87|-). Production 32.9 gm. in counts of 2.1 to 4.2 per hour.

The Board had subsequently addressed all the States to popularise these two models in their respective regions so that the quality and quantity of tasar silk could be improved.

Award for the Best Reeling Machine for Tasar

4.4.3. With a view to stimulate efforts to evolve better type of reeling|spinning machines for non-mulberry silk industry, the Central Silk Board announced a scheme of awards of cash prizes and medals on 16-12-1960. Under this scheme, the Board decided to give a cash award of Rs. 2,500|- and a gold medal costing Rs. 200|- to M|s. Trivedi Industries Ltd. of Patna who had fabricated the 4-spindle reeling cum-twisting machine for tasar which was adjudged the best at the trials held at Bhagalpur.

The award was presented at the 24th General Body meeting of the Board held at Calcutta on 21st November, 1963 by Shri P. C. Sen, Chief Minister of West Bengal.

Short-term Programme for Ensuring Increased Production of Tasar

4.4.4. Having regard to the growing demand for tasar fabrics for export purposes, the Board convened a meeting of States' representatives at Ranchi (Bihar) on 7th March, 1962. After detailed discussions, it was decided to take up a short-term programme for stepping up the production of tasar cocoons and yarn. Accodingly, the Board formulated draft schemes which were later approved by the

Standing Committee of the Board and were forwarded to the States for implementation. In all 11 schemes at a total cost of Rs. 4.44 lakhs were approved and it was expected that the implementation of these schemes would lead to an increased production of 25,000 kahans during 1962-63.

Among other things, the Ranchi discussions had laid stress on the following:—

(i) Marketing should be organised through co-operatives, as far as possible. The markets should be provided with adequate working capital and transport facilities for ensuring efficient working.

(ii) In order to enable the rearers to obtain large production, it was essential to gear up the seed organisation in the States by providing them with additional facilities.

(iii) It was observed that the State Departments were not fully equipped with sufficient technical personnel particularly at the directional level. It was felt necessary that a special scheme should be drawn up to strengthen the organisation at the directional level.

(iv) With a view to intensifying the efforts for production of reeling cocoons, it should be necessary to organise intensified blocks for raising of tasar cocoons particularly in the districts of Singhbhum and Santhal Paraganas of Bihar.

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(v) Coordination of efforts and effective close co-operation between the Industries or Sericulture Department and Forest Department should be ensured for the successful implementation of the special schemes to be undertaken under the short-term programme. The State Governments should each appoint a Special Officer having sufficient experience in tasar industry for being exclusively in charge of the implementation of the special programme. A technical officer of the Board might maintain close contact with the State Governments for bringing about co-ordination among the different tasar silk producing States for ensuring speedy and successful implementation of the special programmes.

(vi) The departments should have suitably trained scientific staff to deal with diseases and pests affecting the tasar food plants.

(vii) Removal or reduction of dalkatti tax and royalty and allowing rearers the use of rearing addas in the forests on longer tenure for purposes of tasar rearing.

Research

4.4.5. The Central Research Coordination Committee in its report in 1961 had recommended that there should be a Central Research Station for Tasar which should preferably be located in Ranchi. A two-man Committee of the Board had recommended in 1961 that Ranchi would be a better place for locating the Central Tasar Research Station in view of the better scientific atmosphere in the place. The Board established the Central Tasar Research Station at Chaibasa in March, 1964 but subsequently shifted the Station to Ranchi on 23rd November, 1964. The Station is at present functioning in a rented building.

This Committee visited the Station on 28th October, 1965. Considering the fact that the Station had been functioning for about a year only in its present location, the work done is to be deemed quite promising. A forest block of 86.31 acres — 13 miles from Ranchi on the Ranchi-Itki road near Nagri village has been loaned by the Government of Bihar where experimental rearings were under progress. The Station is presently headed by an Assistant Director who is assisted by 5 Senior Research Assistants and one Farm Superintendent besides other subordinate staff.

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The budgetary allotments and expenditure of this Station since its inception are as follows:—

Year	Budget Provision	Expenditure
1964-65	Rs. 1,00,000	Rs. 99,624

	Budget Estimate	Revised Estimate	Budget Grant
1965-66	Rs. 1,96,000	Rs. 2,01,100	Rs. 1,65,900

	Budget Estimate as proposed by the Board	As accepted by Finance.
1966-67	Rs. 4,22,100	Rs. 2,23,900

Experiments Under Progress

(a) Host Plant Section:

Comparative studies have been initiated to find out the relative merits of different host plants. 750 sapllings of **T. arjuna** and 780 plants of **T. tomentasa** have been planted in the forest block at Nagri village. Besides, the following have been planted in 3 blocks of 1.75 acres each:—

(i) Bombax malabaricum (Simal).
(ii) Eugenia jambolana (Jamun).
(iii) Bassia latifolia (Mohwa).
(iv) Bauhinia variegata (Kachnar).
(v) Careya arborea (Kumbi).
(vi) Lagersteroemia parvifloa (Sidha).
(vii) Tectona grandis (Sagwan).

Experiments so far conducted have shown that tasar worms fed on **Shorea robusta** spin better cocoons with higher silk content. The Shorea leaves are reported to be sprouting early and also maturing quickly. With suitable pollarding techniques, the Station feels that, Shorea trees could be put to use for large scale commercial rearings without affecting their timber value. The findings require to be tried on field scale before conclusions could be drawn.

(b) Isolation of Strains:

Besides the usual green strains, the Station has isolated blue, yellow and almond strains.

(c) Inter-regional and Inter-specific Crosses:

These studies have just been initiated and the progress was noted to be quite encouraging.

(d) Germ Plasm Bank:

Efforts are being made to build up a germ plasm bank of available strains and races of tasar silkworms so that hybridisation studies could be initiated at later stages.

Among other studies under progress in the Station may be mentioned :

(e) Incubation studies on eggs;

(f) Reeling of cocoons;

(g) Reeling analysis of Indian tasar races;

(h) Quantitative analysis of Indian tasar and

(i) Studies on pests of tasar food plants, larvae and cocoons.

The Station has drawn up a very comprehensive programme of research in the IV Plan and unless the requisite facilities both by way of equipment, buildings and scientific personnel are provided well in time, the efforts are likely to be considerably hampered. It is in this connection that the Committee feels that adequacy of budget grants to the Station should be assured and a well equipped laboratory should be built as early as possible so that the problems of tasar industry might be effectively tackled.

Central Tasar Silkworm Seed Station

4.4.6. The 1 Working Group on Sericulture had recommended in 1959 that a Central Tasar Silkworm Seed Station should be set up by the Board on the lines of the Central Silkworm Seed Station at Srinagar.

The Ranchi meeting had also endorsed this view. The two-man Committee of the Board after a thorough study of the different tasar localities in the Tasar States had recommended that the Farm in Lakha near Raigarh in Madhya Pradesh could be developed into a Central Seed Station for tasar industry.

Accordingly, the Board took over the Station from the Tribal Welfare Department of Madhya Pradesh on 15th March, 1964. The Station has 15 acres of tasar food plantation which contain the following varieties of tasar food plants:—

Variety		No. of plants
Terminalia tomentosa		7,202
Terminalia arjuna		85
Shorea robusta		154
	Total:	7,441

Work in the Station:

The Station conducted its first rearing of 109 disease-free layings of daba variety in July|August 1964. A total quantity of 8733 seed cocoons and 258 of laria cocoons was harvested which was distributed as follows:—

States	Supplies	
	No. of seed cocoons.	No. of d.f.ls.
1. Mysore	200	—
2. Madras	200	50
3. Maharashtra	200	165
4. Madhya Pradesh	4500	219
	5100	434

During the second rearing conducted in September|October 1964, 86 d.f.ls. were brushed to harvest 3647 cocoons. A third experimental rearing with 25 d.f.ls. was also conducted in November-December 1964. The budgetary position during 1964-65 was as follows :—

Budget provision 1964-65	Rs. 70,000
Expenditure	Rs. 63,913

During the current year the following number of d.f.ls. were reared to produce the seed cocoons indicated against each crop:—

Months	Dfls. reared	Cocoons produced	Distribution
I Crop July|Aug.	29	3,300	Indents have been received for 585 Dfls. and 15,450 cocoons.
II Crop Oct.|Nov.	200	17,514	

Budgetary Position:

	Revised Estimate	Grant
1965-66	Rs. 82,800	Rs. 68,500
	Budget Estimate	Grant as indicated by Finance Ministry.
1966-67	Rs. 89,500	Rs. 73,400

The Station has no doubt shown considerable progress during the short period it has been functioning. What is, however, necessary is a more meaningful programme for the Station so that it could come to play a pivotal role in the entire seed organisation for tasar industry. This would call for an effective coordination of work among the Central Station at Lakha and the Seed Stations run by the Departments in the States. This would also pre-suppose the purification of existing races so that clear cut seed multiplication programmes with distinct phases could be drawn up for implementation. This is very essential and should be taken up immediately by the Board if the objectives with which this Station was established are to be fulfilled.

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CHAPTER—V

Recommendations for Future Development

5.1. Host Plants

5.1.1. The Committee was informed that 'asan' and 'arjun' were the two main host plants for tasar silkworms in all the tasar States for commercial production of cocoons. Unfortunately, however, these are not protected trees and have been felled for fuel purposes during the past several decades leading to a progressive reduction in the availability of food plants for tasar rearings. It was learnt that there was considerable number of these trees in the forest areas far from human habitations. However, these could hardly be deemed available for rearing purposes. The marginal return from tasar culture offers very little incentive to the rearers to undertake rearings in far off forests. The present dispersal of these host plants sets limits to the size of rearings. It is rarely that a rearer harvests more than 2 kahans of cocoons for a crop which in terms of the monetary return is not sufficient to generate any enthusiasm for the pursuit of tasar culture. It was in this context that the Sub-Committee on non-mulberry silk industry had rightly laid emphasis on the need to protect the existing food plants and to ensure their further propagation.

5.1.2. The development programmes during the three successive plans have not laid sufficient emphasis on this aspect of the industry. The assumption that hardly 50 % of tasar food plants were presently being utilised for rearing seems to have influenced this line of thinking. What has not been sufficiently realised is that the host plants are not available in adequacy in the vicinity of human habitation to sustain large scale rearings. In the result, despite the suggestions of the Non-mulberry Sub-Committee and remarks of the I & II Working Groups as also the decisions of the representatives of tasar States at Ranchi in March 1962, the major tasar States had not drawn up any useful schemes for the host plant sector. Only Andhra Pradesh has given thought to this question. The Committee was informed that in Bihar the Chief Minister had recently issued instructions to the authorities concerned to ensure that there was no further destruction of 'asan' and 'arjun' trees in the villages. Admittedly something more positive requires to be done in this direction.

5.1.3. The Committee has considered this question and recommends as follows :—

(i) Cutting down of tasar host plants to be prohibited.

In districts where tasar industry is practised, cutting down of tasar food plants should be prohibited if need be by legislation.

(ii) Grazing lands, waste lands and village commons for propagation of tasar food plants.

A sustained drive should be initiated by the Industries|Sericulture Departments conjointly with the Forest Departments in the States to raise plantations of 'asan' and 'arjun' trees in grazing and waste lands and village commons so that in the course of the IV Five Year Plan, sound foundation would have been laid for orderly development of tasar industry. The Committee recommends that the States should immediately draw up suitable schemes for this purpose and include the same in the annual plan for 1966-67. In this connection, the question of utilising the facilities for afforestation under the soil conservation programmes in operation in some of the States is worth consideration.

(iii) Nurseries for supply of host plants.

There is no organisation at present to meet the requirements of future plantation programmes. The Committee suggests that nurseries may be set up by the Industries|Sericulture Departments in consultation with the Forest Department so that a continuous supply of tasar food plants could be assured.

(iv) Sparing of unreserved forests, road-side trees etc., for tasar rearing.

Orissa has stated that out of the 3 types of forests viz., (a) Reserve, (b) Protected, and (c) Khesera, rearing was permitted only in Khesera forests. Madhya Pradesh has reported that there were large plantations of tasar food plants in the reserve forests but the Forest Department did not permit tasar rearings in these areas because of the fear that the rearers resorted to illicit feeling of forest trees. Only in Andhra Pradesh some beginning appears to have been made in the matter of securing reserve forests in Warangal district for rearing of tasar silkworms. It is quite conceivable that there will be opposition from the Forest Departments to any attempts to conduct tasar rearings in reserve forests. Nevertheless, the achievement of Andhra Pradesh in this direction indicates a possible line of approach which is worth pursuing.

Similarly the question of getting the protected and unreserved forests for tasar rearing should receive the attention of the Industries Departments.

In Bihar, the Committee was informed that the Highway Department was reluctant to spare thee road-side trees for tasar rearings. The objection would seen to arise from the fear that the rearers might misuse the facility and recklessly pollard the trees to the point of permanent harm. With a little imaginative co-operation between the Industries and Highway Departments, it should be possible to utilise these road-side trees which have the advantage of being close to the rearers' habitations.

(v) Alternate Food Plants

The Committee was impressed with the studies under progress in the Central Tasar Research Station, Ranchi in this regard. The finding of the Station that Sal **(Shorea robusta)** is a very good alternate food plant for the tasar worms and that the nutritive value of Sal leaves is much higher than that of Asan and Arjun is of considerable significance. It has been shown by the experiments in the Station that cocoons raised on 'Sal' manifest higher silk content and give longer reelable silk. A further advantage would seem to be that Sal sprouts earlier and quicker. The 'Modal', 'Modia' and 'Raily' varieties of tasar silkworms which are raised on 'Sal' in nature have been known to record 20 to 24% shell ratio as against about 11 to 12% for 'Daba' and 17.4% for 'Moonga'. Similarly the filament length in the case of the varieties grown on Shorea is more than 1200 metres as against 834 metres in 'Moonga' and 750 metres in 'Daba'.

It is no doubt too early to arrive at any general conclusion from the data presently available in this regard. The Committee, however, recommends that the State Departments should evince interest in this experiment and initiate field studies in collaboration with the Central Tasar Research Station, Ranchi so that the commercial potentialities of this finding could be fully exploited.

The Committee also observed that a number of alternate food plants had been raised in the Central Tasar Research Station, Ranchi for makeing further studies on the relative merits of the various host plants for tasar silkworms. The Committee suggests that such studies should be conducted in collaboration with the research units of the State Department at Baripada (Orissa) and Ambikapur in Madhya Pradesh.

TASAR SEED

5.2. Demand and Supply

5.2.1. The total requirement of disease free layings for the tasar States is 54 lakhs as per details below:—

Table — XII

State	Demand in lakhs of d.f.ls.	Supply Lakhs of d.f.ls.	As seed cocoon.
1. Bihar	28.25	3.46	
2. Orissa	12.50	0.15253	1600 kahans
3. Madhya Pradesh	4.00	—	4 lakhs seed cocoons.
4. West Bengal	6.00	0.44 Govt. 5.12 Private	
5. Maharashtra	2.00	0.41634	56913 seed cocoons
6. Andhra Pradesh	1.25	1.44161	
7. Uttar Pradesh	Negligible		
Total :	54.00		

Note: In the case of item (2), (5) and (6) we have calculated the requirement on the basis of output of cocoons, i.e. 50,000 kahans, 8,000 kahans and 5,000 kahans respectively. The disease free layings required for production of 1 kahan being 25

The actual supply of disease free layings including seed cocoons is hardly 40 % of the total requirement. This shows a serious hiatus in the organisation of the industry. The State Departments have no doubt concentrated on setting up seed stations and sub-stations during the past three Plans but by and large the demand for seed has remained unsatisfied thus impairing the production programmes.

Recommendations

5.2.2. The Committee discussed this subject in detail with the representatives of the States and its recommendations are as follows:—

(i) **Supply of Seed Cocoons Instead of Disease Free Layings for Industrial Rearings.**

The Committee was informed that in Orissa as also in Madhya Pradesh the practice was to supply seed cocoons rather than disease free layings. Orissa had further stated that the precise advantages of rearing disease free layings were not quite clear. In the circumstances, the Committee feels that it would be worthwhile attempting to meet the requirement of seed through supply of seed cocoons rather than go through the laborious technique of seed preparation which is time-consuming. In making the above recommendations, the Committee has taken note of the need to keep out "pebrine" disease. We are aware that no chances should be taken in so far as this dreaded disease is concerned. It was learnt that at present the main losses of tasar rearings spring from the attacks of flacherie and grasserie which are caused by bad leaf or weather conditions. The technical officers of the States also seem to be of the view that at present infection of pebrine was almost negligible. Under these circumstances, it would not be correct to lay disproportionate emphasis on preparation of disease free seed just to keep off a possible outbreak of "pebrine". Therefore as an expedient measure the Departments would do well to supply seed cocoons so that the requirements of seed could be met in full.

The Committee was told that if seed cocoons were issued instead of eggs, the rearers were likely to sell away the cocoons. Besides transport of seed cocoons over long distances also would pose problems. While the Committee appreciates these difficulties yet having regard to the requirements of the situation we feel that supply of seed cocoons rather than examined eggs could be adopted for the present for the commercial rearings.

(ii) **Seed Zones to Be Set up.**

It should be posssible to demarcate certain zones exclusively for growing of seed cocoons. The disease free layings produced in the Tasar Seed Stations|Sub-Stations and seed farms should be issued for rearing in selected zones. Bihar has stated that the nature-grown cocoon "Modia" was confined to distinct zones. Similarly Orissa has reported that there were 11 distinct seed zones for nature-grown 'Bogai' variety while for 'Daba' and 'Jadoi' varieties selected main crop cocoons were used for seed. Madhya Pradesh has stated that there were no seed zones but the tradition was to obtain seed cocoons grown on 'sal' in the monsoon crop from distant villages. The system in vogue in Bihar and Orissa would seem to indicate that it could be usefully extended to cover the requirements of seed cocoons for commercial rearings. In other words exclusive seed zones should be organised.

(iii) Use of Reserve Forests for Seed Rearings.

The Committee feels that it would be worthwhile to attempt seed rearings in Reserve Forests so that the present availability of nature-grown seed cocoons could be supplemented. The Committee learns that in the case of Orissa a beginning has already been made in this direction on the recommendations of the Central Silk Board and that two areas had been selected for this work. Other tasar States could profitably pursue this approach so that the output of seed cocoons in the States could be increased.

(iv) Exploitation of Heterosis for Stabilization of Cocoon Crops.

It has already been stated that a laying containing about 150 eggs when reared hardly yields 50 cocoons. The loss of nearly two thirds of the larvae is ascribed to predators and incidence of rot-diseases like flacherie and grasserie. If this should be minimised it is necessary that hardier races of silkworms should be evolved. Principally this is the work of the Research Stations and can be tackled on long term basis only. The Committee was happy to note that some useful studies in this direction had already been initiated in the Central Tasar Research Station at Ranchi. But they require to be intensified and a sense of urgency also should be imparted to these experiments so that tangible findings might become available in the near future. The Department should attempt inter-varietal and inter-regional crosses wherever disease free layings were issued so that the phenomenon of heterosis could be exploited for crop stablization.

(v) Free Supply of Disease Free Layings Seed Cocoons.

The normal unit of production by a tasar rearer is about 2 to 3 kahans for which he will have to rear 50 to 75 disease free layings.

In case the rearer is to produce his own requirement of seed he will either have to retain about 150 to 200 cocoons from his earlier harvests or purchase these from the market. On the basis of a normal price of Rs. 80|- per kahan this purchase would call for an initial investment of Rs. 10 to Rs. 12 by the tribal rearer on seed which should be deemed sufficiently high to operate as a deterrent. In the circumstances, the Committee recommends that the Department of Industries|Sericulture should devise measures to meet the full requirement of seed cocoons **free of cost.** As stated elsewhere in this report the actual financial implications of such a measure were not likely to be great as cut cocoons of tasar are valued high and the seed requirement of each rearer will hardly cost the Department more than Rs. 2|- or Rs. 3|- per annum. Elsewhere in the report we have mentioned that the effective cost of seed for production of one kahan of cocoons was about one rupee as the cut cocoons fetch a good price. On this assumption and on the basis of a total production of about 2.34 lakhs of kahans of commercial cocoons the actual requirement of funds for free-supply of seed will be less than Rs. 2.5 lakhs. In view of the importance of this question the States would do well to supply seed free of cost to the rearers.

Silkworm Rearing

5.3. The present methods of rearing are rather crude and irrational. Admittedly in a crop like tasar where monetary returns are marginal, man-hours cannot be wasted in adopting sophisticated techniques of rearing as in mulberry silk industry. What is however recommended is a little more attention to incubation of seed to ensure uniform hatching of worms, choice of host plants in keeping with the stage of growth of the larvae, maintenance of optimum larva-forage ratio etc. While it may be difficult to precisely assess the extent of impact of these aspects individually, the collective effect is bound to be considerable. As stated earlier the survival percentage of larva is hardly 30 at present. This is indicative of the possible scope for crop stabilization through attention on various aspects of tasar rearing. To ensure sufficiency of leaf of suitable quality pollarding of host plants should be done on a rational basis. In Bihar the Committee noted that this aspect was receiving attention of the department. There is however need for systematising this operation under expert direction of the departmental technicians so that a larger proportion of the tasar food plants might receive due attention.

Monetary Returns to the Tasar Rearers.

5.4. Our questionnaire sought to elicit information about the average annual income of a tasar rearer. The replies from the States have indicated the following position:—

Table — XIII

State	Average annual income of tasar rearer
Bihar	— Rs. 200 - 300 (Bhagalpur division)
	— Rs. 300 - 500 (Singhbhum district)
Orissa	— Rs. 120 - 180 depending on a yield of 2 or 3 kahans @ Rs. 60|- per kahan.
Madhya Pradesh (1964)	— Rs. 500 This was due to a price of Rs. 80 per kahan.
West Bengal	— Rs. 600
Maharashtra	— Rs. 1200 to Rs. 1600 if he harvests 6 to 8 khandis of cocoons. (Khandi = 4000 cocoons)
Andhra Pradesh	— Rs. 400

The above would indicate that there was wide divergence of opinion among the States about the effective earnings of a tasar rearer. The Committee however feels that the figures furnished by Orissa and Bihar (Bhagalpur region) more or less depict the actual position. Almost all the States have agreed that the normal yield of tasar cocoons per rearer was about 2 to 3 kahans. On the basis of the usual price of Rs. 60|- to Rs. 70|- per kahan the average income of a tasar rearer might be taken as Rs. 120 to Rs. 210. Having regard to the difficulties and risks of tasar rearings this monetary return is to be deemed rather low and quite insufficient to sustain the interest of even traditional tasar rearers. Additionally, the tasar belts of Bihar, Madhya Pradesh and Orissa are witnessing an unprecedented growth of heavy industries including steel plants and more and more tribal rearers are attracted by the wages prevalent in these factory sites as also the road and other developmental works. It is in these circumstances that the need has arisen to make the pursuit of tasar culture more remunerative so that the industry might be more viable. The Committee accordingly examined the question of a "fair price" for tasar cocoons which is detailed under para 5.5.1. below.

Fair Price for Cocoons

5.5.1. The Committee is of the view that one of the main factors which have impeded the orderly progress of tasar industry during the past several decades is the stranglehold exerted by the 'Mahajan' or 'Paikar' on the poor tribal rearers. The Committee was informed that the price actually realised by the rearer for a kahan of cocoons was as low as Rs. 50-60 even when the ruling price per kahan of daba cocoons was Rs. 160. This is indicative of the disproportionate share of profit of the intermediaries to the detriment of the industry as a whole.

5.5.2. It was in this context and on the specific request received from the Central Silk Board, that the Committee made a study of the economics of tasar industry to arrive at an estimate of the fair cost of production of tasar cocoons. It is well known that the prices of tasar cocoons are determined by the estimated silk content of cocoons. The Daba, Bogai, Chopi etc. varieties fetch different prices according to their silk contents. But a more rational system of "price-variety relationship" is one where the price of cocoons is based on the estimated yield of silk per pan (80) of cocoons. Such a system appears to be in vogue in Orissa where the following grades of cocoons are recognised:—

Grade	One pan or 80 tasar cocoons yielding.
I	Over 6 tolas of silk.
II	Between 5 and 6 tolas.
III	Between 4 and 5 tolas.
IV	Between 3 and 4 tolas.

In arriving at the fair cost of production the Committee has taken into consideration the best grade of cocoons viz., those where 80 cocoons will yield over 6 tolas of silk.

The Committee had before it the report of a detailed economic survey in tasar States made by the Economics and Statistics Section of the Central Silk Board for arriving at the fair cost of production of tasar cocoons. According to this study the fair cost of production of a kahan (1280 cocoons) of cocoons of Grade-I may be taken as Rs. 65 as follows:—

5.5.3. The factors which enter into the cost of production of tasar cocoons are:—

(i) Cost of seed cocoons.
(ii) Return from the sale of pierced cocoons.
(iii) Dalkati|royalty paid on trees and cocoons.
(iv) Labour.

Items (i) and (ii) could be taken together. The number of seed cocoons required to produce one kahan of cocoons is 64 on the basis of the ratio of 1 : 20 for the seed cocoons to commercial cocoons. In other words, 64 seed cocoons could be expected to yield 25 disease free layings each of which will ultimately produce 50 commercial cocoons or 1250 (roughly 1 kahan) cocoons per 25 disease free layings. As pierced cocoons command good price it is reported that the difference in price between 64 whole cocoons and 64 cut cocoons is only Re. 1|-. Hence the impact of cost of seed on the total cost of production of 1 kahan of cocoons is Re. 1|- only.

Item (iii) Dalkati and Royalty.

The table below gives the rates of royalty prevailing in Orissa:

Dalkati — Rs. 0.75 per adda and
Royalty — Rs. 3.00 per kahan of cocoons.

Note :—One 'adda' normally sustains the rearing of 3 kahans of cocoons. On this basis the impact of 'dalkati' on 1 kahan of cocoons is Rs. 0.25.

Item (iv) Labour.

It has been ascertained that the number of man-days required for harvesting 3 kahans of cocoons was about 120. The prevailing wages for an adult in the tasar area could be taken as Rs. 1.50 per day. On this basis the total wages for 120 man-days will work out to Rs. 180|- for producing 3 kahans of cocoons in one adda or Rs. 60 per kahan.

Summarising the above, the position will be as follows:
Cost of production of 1 kahan of cocoons in Orissa.

(i)	On account of seed	Re. 1.00
(ii)	Dalkati|royalty	Rs. 3.25
(iii)	Labour	Rs. 60.00
	Total :	Rs. 64.25 or say
		Rs. 65.00

5.5.4. The Committee had addressed the States to furnish their estimates of costs of production. Bihar has stated that the cost of production of one kahan of 'Daba' cocoons was about Rs. 64|- while 'Sarihan' was Rs. 41.25. It would be clear from the above that the cost surveys independently made by the Central Silk Board and the Government of Bihar have both revealed that the cost of production of one kahan of cocoons could be placed at Rs. 65 for Grade-I cocoons. The Committee accepts this figure.

5.5.5. The Committee feels that unless the actual producer of tasar cocoons is assured of this price, it will be very difficult to sustain his interest in the pursuit of tasar culture. Notwithstanding the fact that the tribal rearer is bound by ties of tradition to this ancient craft, the impact of economic compulsion is forcing him to seek alternate avocations. It is therefore imperative to assure him a reasonable return for his toil and a price of Rs. 65 per kahan is perhaps the minimum that he should get.

5.6. Marketing of Cocoons

5.6.1. Having established the fair cost of production of 1 kahan of cocoons as Rs. 65 for Grade-1 of cocoons the next step would be to ensure that a suitable mechanism was created so that the rearer might always get this price for his produce, irrespective of the trends of demand. We have already mentioned elsewhere in this report that the tone of the industry is to a great extent set by the export demand. If the tempo of exports is to be sustained the exporters should also be enabled to get raw material (cocoons) at reasonable prices. Perhaps a price of Rs. 90 per kahan (Grade-I) of 1280 cocoons would enable the exporters to enter markets abroad with confidence to meet the mounting challenge from Hong Kong exporters.

5.6.2. In short the marketing mechanism should be able to assure price of Rs. 65 per kahan to the rearers and sell cocoons to the manufacturers at Rs. 90 per kahan.

5.6.3. The price of tasar cocoons which ruled between Rs. 33 and Rs. 53 per kahan (Daba) in 1958 rose to operate at an unprecedented level of Rs. 190 per kahan in March 1965. Such violent fluctuations of prices arise because of the absence of any rational marketing system. The Mahajan still controls the major portion of the trade in tasar cocoons especially in Bihar and Madhya Pradesh. The Mahajans give petty loans to the rearers in their times of need and bind them to sell their cocoons at predetermined prices which are invariably very unremunerative. This irrational practice has actually exerted a strangling effect on the very sinews of the industry and crippled its development.

The State departments have sought to eliminate this bottleneck by organising co-operatives of rearers and by setting up Government markets.

Co-operatives

5.6.4. The Committee learnt that in Orissa the co-operative system had been working satisfactorily. The Apex Tasar Society at the State level had already been set up and it assured the rearers a reasonable price for cocoons. It also controlled the sale of cocoons of all primary societies. The selling price was fixed keeping in view all sectors viz. rearers, reelers, spinners, weavers and exporters.

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In Bihar the co-operative organisations have been total failures. The Committee recommends that Bihar should send one or two of its technical officers to Orissa to make a complete study of the working of the co-operative societies for tasar so that the same pattern could be adopted with light modifications to suit local requirements. Similarly Madhya Pradesh and other Tasar States could profitably go in for co-operative organisation of rearers so that the tribal rearers could be gradually weaned away from the clutches of the 'Mahajan'.

Government Markets

5.6.5. Three markets in Bihar and Six in Madhya Pradesh have been set up. In Bihar the quantity handled by the markets in 1964 was 1400 kahans out of the total production of 1,13,000 kahans or

1.2. % of the gross output. In Madhya Pradesh only 4900 kahan out of a total production of 30,000 kahans had been handled by the 6 markets in 1964-65.

The Committee has examined the working of these markets. The main disability of these units would seem to be the following:-

(i) The units are rather small.

(ii) The working capital is inadequate.

(iii) The market staff suffer from immobility due to want of suitable vehicles to enable them to reach the countryside where the 'hats' or markets are held.

The Committee recommends that the marketing scheme of the States should get more liberal provision of funds for purchase of cocoons. The markets should also be provided with necessary buildings with stifling arrangements for cocoons and for staff should be rendered mobile by provision of suitable vehicles.

Price Support Scheme for Tasar Cocoons

5.7.1. We have already mentioned that one of the main factors which has aperated against the orderly progress of tasar industry during the past several decades was the unremunerative prices realised by the actual toiler in the field. We have made out that even when the prices for tasar cocoons ruled at unprecedented levels above Rs. 160 per kahan, the rearer was still getting hardly Rs. 50 or Rs. 60 per kahan.

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The Committee was informed that due to slump in export trade in tasar during the later half of 1965, the prices for tasar cocoons had dipped considerably. The situation has been further aggravated by the reported heavy harvests during 1965 crops. The result has been that in Bihar the daba cocoons were being sold at Rs. 70 to Rs. 75 per kahan while in Madhya Pradesh the State department had to announce a floor price of Rs. 50 per 1000 cocoons (Rs. 63 per kahan). Even in Orissa the prices were operating at Rs. 90 per kahan of 1600 cocoons. This bears no comparison to the vibrant market conditions in January, 1965 when the prices ruled at Rs. 125 per kahan. The States are naturally very apprehensive that the low prices for cocoons will have very serious repercussion on the industry and fear that many rearers would lose interest in the pursuit of tasar culture. It is in these circumstances that the

Committee feels that the situation warrants the launching of price support operations on an extensive scale so that the price-depression might not permanently harm the future outlook for the industry.

Regarding the price which should be offered to the rearer, the Committee feels that Rs. 65 per kahan of 1280 cocoons as suggested by Bihar and as arrived at by the Board's survey team will be reasonable. As already stated the price of Rs. 65 per kahan is for cocoons of the I Grade where the yield of tasar silk will be over 6 tolas per pan of 80 cocoons.

Organization for Operating the Price Support Scheme for Tasar Cocoons

5.7.2. The Committee considered the feasibility of utilising the existing institutional machinery to operate a price support scheme. There are at present the Government markets and the Co-operatives which have been looking after the marketing side of tasar industry though very inadequately. We had explained earlier that except in Orissa the Co-operatives had not worked satisfactorily in other States. The Government markets had been ineffective for a variety of reasons and as a result marketing of tasar cocoons was still largely controlled by the "Mahajan" to the disadvantage of the rearers and generally against the larger interests of the industry as a whole.

5.7.3. The Committee feels that even if the Co-operatives and Government markets were to enlarge their activities many fold, it will be extremely difficult for them to effectively replace the Mahajan. The effort is likely to prove time-consuming and the result is rather doubtful.

5.7.4. In the circumstances, the Committee considered the alternative of setting up a separate Corporation to handle the marketing of cocoons. Orissa has definitely indicated that it was not in favour of such a Corporation. The Corporation's activities will therefore have to be limited to the States of Bihar, Madhya Pradesh, West Bengal, Maharashtra and Andhra Pradesh. With such a vast field to operate and covering as it will 5 States with different levels of tasar activities, the question of evolving a workable pattern for the Corporation and securing the necessary financial resources etc. will bristle with difficulties. The organisation might prove to be too cumbersome to admit of efficient administration. The Committee, therefore, is of the view that such an institution is not feasible.

5.7.5. Having established that the existing institutional machinery was inadequate and that the setting up of a separate Corporation to handle the purchase of tasar cocoons might present some administrative problems, the Committee considered the next alternative of commissioning the resources of State Trading Corporation for handling the price-support operations for tasar cocoons. The State Trading Corporation has been handling the price-support schemes for jute, tobacco, lemon-grass etc. and has the necessary experience for operating a similar scheme for tasar cocoons. The difference between the support-price for tasar cocoons (Rs. 65 per kahan) and selling price to the exporters (Rs. 90 per kahan) is sufficiently wide to cover all expenditure incidental to operation of the price-support scheme and may even yield sufficient profit to the State Trading Corporation.

5.7.6. The Committee has considered the financial implications of the scheme for price-support operation. It is felt that if the prices for tasar cocoons are to be stabilised the State Trading Corporation may have to purchase about 30,000 kahans of cocoons during a year, at the support price of Rs. 65|- per kahan. This would call for an investment of Rs. 20 lakhs. As there will be a minimum of two transactions in a year the effective investment on the part of the State Trading Corporation will be about Rs. 10 lakhs in a year. Considering the financial resources of the State Trading Corporation this investment should not present any problems of finance.

5.7.7. The Committee also took note of the fact that recently the mere announcement that the State Trading Corporation was likely to take over the entire accumulated stocks of filature silk in Mysore had led to a virtual scramble for filature silk from the silk merchants resulting in the quick sale of accumulated stocks. Applying this analogy to tasar cocoon industry, it will be reasonable to expect that the mere entry of State Trading Corporation into the tasar market with its vast resources — financial and otherwise — will exert a tranquilising effect on market trends for tasar cocoons and the prices might stabilise around the target figure of Rs. 65 per kahan without the State Trading Corporation having to buy any large quantities of cocoons.

5.7.8. Even assuming that the actual quantity of tasar cocoons to be purchased by the State Trading Corporation will be far less than 30,000 kahans the question of storage and stifling facilities is bound to present some difficulties. It is in this connection that the Committee suggests that the departments of Industries|Sericulture etc. in the tasar States should fully co-operate with the State Trading Corporation in its price-support operations and if need be keep all their existing facilities like cocoon godowns, stifling equipment etc. at the disposal of the State Trading Corporation till such time that this organisation could have its own arrangements to handle the purchase and storage of cocoons.

It is worth mentioning here that storage of cocoons does not result in deterioration as unfortunately is the case with lemongrass. The price difference between whole cocoons and cut cocoons is not much. Nevertheless, the State Trading Corporation will have to think of having ultimately suitable arrangements to ensure stifling and storage of whole cocoons.

5.7.9. The question whether the State Trading Corporation should limit its activities only to the purchase of cocoons or whether it should enlarge the scope of its operations to include even trade in tasar yarn was examined by the Committee. It was felt that the processing of cocoons into yarn was a legitimate activity of the States and it will not be desirable to burden the State Trading Corporation with this work just at present. However, having regard to the employment potential of the cocoon reeling and spinning sector, the Committee felt that in case the States should so desire, the State Trading Corporation should at a later stage suitably expand its activities to include the tasar cocoon reeling and spinning aspects.

5.7.10. As a measure of stabilising cocoon prices, Orissa has suggested the registration of all merchants who trade in tasar cocoons and banning the sale of tasar cocoons by unregistered traders and making the offence punishable by law. The Committee however feels that this will be an extreme measure which may needlessly complicate the issues under consideration.

Reeling and Spinning Equipment etc., for Tasar

5.8.1. The Committee noted that the reeling as also the spinning equipment at present in use in the tasar States was of an antiquated type. Besides, the method of processing cocoons into reeled or spun yarn was very inefficient and output of yarn also was rather low.

The Committee was given to understand that the Central Silk Board had conducted some comparative trials in 1962 at Bhagalpur for studing the relative efficiency of different reeling and spinning machines. It would appear that the trials indicated the superiority of Trivedi, 4-spindle reeling-cum-twisting machine over the other equipment. Though three years have elapsed since these tests were conducted which resulted in the recommendation for general adoption of this machine, it was learnt that there were hardly 264 machines in Bihar and 50 each in Madhya Pradesh and Orissa. The cost of the machine was reported to be Rs. 367 and it seems that this high cost has operated against its general adoption. West Bengal has observed that this machine was not very suitable for reeling purposes due to several mechanical complications. It is not quite clear to the Committee how this could be so when all other States have accepted the Trivedi machine as a positive improvement over the appliances in vogue at present. The Committee learnt that there were a number of schemes in operation in all the tasar States for issue of these machines on subsidy-cum-loan basis of 50 : 50. The price of the machine being rather high it could be easily imagined that the high loan element operates as a disincentive against the success of this scheme. It was reported to the Committee at a meeting of the rearers at Hatgamaria (Bihar) that the rears would require atleast a subsidy of 75% if they were to go in for large scale purchase of these machines.

5.8.2. In this connection it was also learnt that the rearers normally were free after the agricultural and tasar operations between November and April|May of the subsequent year. Unlike live cocoons the tasar silk yarn can be preserved for longer periods and as such it would be distinctly advantageous if a scheme could be formulated by which we could provide these machines on a larger scale to the rearers so that they might have the incentive as also the wherewithal to reel the cocoons and store the yarn and sell the same when the prices are more favourable. It is as such that the Committee feels that there is a case for increase of the subsidy element in the scheme of popularisation of the reeling-cum-twisting machines. This should be treated as a socio-economic measure for the general amelioration of the poor tribal rearers. The Committee's recommendation 5.7.9. is relevant in this connection.

Weaving

5.9.1. The Committee noted that the present system of weaving was also very inefficient. In most of the places pit looms were being used. The pit loom is the most inefficient device for weaving and as such the Departments concerned should immediately initiate action for quick change over to more modern methods of weaving.

Finishing

5.10.1. There are three distinct processes in finishing viz., washing, kundi process and scissoring. All these processes are at present being conducted in a very primitive way and call for modernisation. The Committee appreciates that there are certain inherent aspects of tasar industry which operate against adoption of modern techniques. Nevertheless, it should be possible to introduce an element of rationalisation in these techniques. In this connection, the Committee is of the view that the future demand for tasar fabrics will greatly be dependent on the extent to which the tasar weavers will adopt progressive finishing techniques. The Committee has in mind the possibilities of giving "silicon finish" to tasar fabrics which could give it the "drip dry" quality. Experiments should be initiated in this regard either in the laboratories of SASMIRA or other similar laboratories where facilities for such studies exist.

Bhagalpur Training and Weaving Institute

5.11.1. The Commitee had an opportunity of studying the working of the Bhagalpur Training and Weaving Institute. It was learnt that this was started about 20 years back. There are regular training courses in this Institute in sericulture as also in spinning, weaving and other allied aspects of the industry. Bhagalpur is the heart of tasar weaving industry and is reported to be having atleast 5000 handlooms which could operate on tasar weaving. It was perhaps under these circumstances that the Government of Bihar felt compelled to locate the Institute at Bhagalpur. However, the working of the Bhagalpur Institute leaves much to be done. The technological problems of tasar will have to be tackled by more modern devices and it is as such that the Committee feels that the Institute at Bhagalpur should be fully equipped and staffed with adequately trained technical officers so that the problems of the industry which might crop up in future might be more effectively tackled. This Committee has in view a type of organisation like the "ATIRA", "BTRA" or "SITRA" of cotton textile industry, though in the case of tasar it will necessarily have to be a smaller set up.

Co-operative Societies

5.12.1. As already mentioned elsewhere in this report, the co-operatives in Bihar were not functioning satisfactorily, while the Apex

Society in Orissa as also a society established in Gharghoda in Madhya Pradesh were noted to be discharging their work properly. In this connection, it has to be stated that the tribal rearer is normally not a viable economic entity. He is often obliged to go in for petty loans and in the process falls a victim to the economic stranglehold of the 'Mahajan'. It is desirable that same methods are devised to wean him away from the 'Mahajan' so that the rearer might not be obliged to resort to distress selling of cocoons at uneconomic prices. It is as such that the Committee feels that efforts should be made by Department concerned to set up Co-operative Credit Societies with a view to affording necessary financial relief to the tribal rearers at times of need.

Co-ordination of Work

5.13.1. The problems of tasar industry are of a very complex nature and call for an integrated approach by all the States concerned for effective solution. It was in this connection that the Board would appear to have decided to appoint a Senior Officer in 1962 for purposes of co-ordinating the work of the various tasar States for stabilization of the industry. The Committee is of the opinion that there is urgent need for revival of this proposal so that the future development programmes relating to the industry could be co-ordinated in an efficient manner to attain the objective of orderly development of tasar industry.

Research

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5.14.1. The Committee had an opportunity to visit the Central Tasar Research Station set up by the Central Silk Board at Ranchi. It was learnt that this was previously functioning in Chaibasa and was shifted to Ranchi in November, 1964. Though this has been functioning for about a year now, the Committee noted that the work so far done had been quite promising. However, the Station has been suffering for want of suitable buildings to effectively conduct its assigned work. The Committee feels that this deficiency should be remedied as early as possible so that this useful institution might come into its full operational efficiency. The Committee also notes that Madhya Pradesh has a Research Unit at Ambikapur while Orissa has a similar unit at Baripada. As already stated elsewhere in the report, the research requirements of tasar industry cannot be tackled in isolation. There should be a well knit organisation with the Central Tasar Research Station at Ranchi as the driving force and with a few field units in the States so that co-ordinated experiments to resolve regional problems could be laid out on systematic lines. The Committee strongly recommends that immediate action should be taken to ensure co-ordination of work among the units at Ambikapur, Baripada and the Central Tasar Research Station, Ranchi.

Export Assistance

5.15.1. Upto 1961 no assistance was available against export of tasar fabrics. From 1st April 1961, it was decided to grant export assistance equal to 3 % of the F.O.B. value of exports in the form of licence for import of coal-tar, dyes and chemicals. In October 1962, the quantum of assistance was raised to 10% of F.O.B. value of exports. Besides the coal-tar dyes and chemicals, raw silk, man-made fibres, machinery, equipments etc., were also included in the items permitted for import against entitlement earned. In September 1965, the scheme was further revised. While the quantum of assistance remained at 10% the exporters were allowed to import coal-tar, dyes and chemicals to the extent of 5% of the F.O.B. value only and the import of silk, machinery, equipment etc., out of the balance of 5%. The exclusion of synthetic yarn from the permissible items in the import entitlement would appear to have cut down the premium earned by the tasar exporters. The exporters had accordingly been urging for additional incentives so that they might retain their competing strength.

5.15.2. Additionally the emergence of Hong Kong in recent months as an exporter of tasar fabrics to the U.S.A. has been posing challenges to the export trade of India in tasar fabrics. It has been stated that as against an export price of Rs. 13.20 per metre of Indian tasar fabrics. Hong Kong was able to offer even better quality of fabrics at Rs. 12.40 per metre. This new challenge is bound to hamper our export trade and measures should be devised to tone up the exports by suitable export assistance.

5.15.3. The Committee has considered this aspect and our views are as follows :—

The cost investigation studies conducted by the Central Silk Board revealed the following:—

(i)	Fair purchase price of daba cocoons by exporters.	Rs. 90.00 per kahan.

(ii)	Cost of production per lb. of tasar reeled yarn.	Rs. 37.20
(iii)	Cost of production per lb. of tasar Ghicha.	Rs. 26.00
(iv)	Cost of production per lb. of Katia.	Rs. 17.50
(v)	Cost of production per lb. of tasar Jhuri.	Rs. 12.00

The tasar fabrics exported may be broadly grouped under 3 categories viz., light, medium and heavy. Cost of production of the above are as follows :—

(i)	Average cost of production of light weight fabrics with reeled tasar in Warp, Matka|Katia|Ghicha weft.	Rs. 13.40 per metre.
(ii)	Average cost of medium weight fabrics of different combinations of reeled tasar|Chicha|Katia|Noil in warp and weft.	Rs. 17.80 per metre
(iii)	Average cost of production of heavy weight fabrics of different combinations Katia|Jhuri in warp & weft.	Rs. 21.11 per metre.

The bulk of our exports are of category (ii) (i.e. medium) above. The quantum of assistance required is estimated as follows:—

(i)	Fair cost of production of medium weight fabrics as assessed by the study team of the Board per metre.	Rs. 17.80
(ii)	The average export price	Rs. 13.20
(iii)	Estimated loss to be covered by export assistance	Rs. 4.60

As mentioned earlier, the exporters of tasar fabrics are at present getting an assistance to a tune of 10% of the F.O.B. value of exports. The premium available on the above is Rs. 9.50 as follows:

F.O.B. value of exports	Rs. 100.00
Premium on 5% dyes and chemicals @ 150%	Rs. 7.50
Premium on 5% silk @ 40%	Rs. 2.00
Total :	Rs. 9.50

Assistance available per metre of fabrics exported.	Rs. $\frac{9.50}{100}$ x Rs. 13.20 or Rs. 1.25
Gap to be covered	Rs. 4.60 — Rs. 1.25 or Rs. 3.35 per metre.

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The above amount expressed as % of F.O.B value of 1 metre i.e. Rs. 13.20 comes to 25.4% In the coming years the competition from Hong Kong is bound to increase. Thus it would seem that there is a case for giving a cash incentive of 25% to the exporters of tasar fabrics if the present tempo of exports is to be sustained. The above calculations are all based on the assumption that the purchase price of tasar cocoons by the manufacturer|exporter is Rs. 90 per kahan of Grade-I cocoons.

5.15.4. The Committee is aware that the purchase price by the exporters at present is about Rs. 70 to Rs. 75. As per our recommendations made earlier the industry can remain viable only if the rearer gets a price of Rs. 65 per kahan and exporters secure their requirements of cocoons at Rs. 90 per kahan. We cannot also ignore the competition posed by Hong Kong. The Committee has taken note of the announcement made vide Trade Notice No. EPB|6 (1)|66|3404 dated 25th January, 1966 of a cash incentive of 15% of F.O.B. value of exports of tasar fabrics as from 1st October, 1965. This would still leave an appreciably wide margin of loss in export trade uncovered. It is therefore necessary that the export assistance is further liberalised by giving a total cash incentive of 25% so that Indian exporters could enter the American and European markets with confidence.

5.15.5. Once again the Committee reiterates its view that for tasar industry to remain viable, exports should be maintained at high levels. It is the exports which will impart a stability to the industry and no efforts should be spared to put our tasar exports on sound basis.

CHAPTER - VI

Summary of Conclusions and Recommendations

1. The Peoples' Republic of China is by far the largest producer of tasar silk in the world — accounting as she does for more than 90% of the global output of tasar silk. (3.2.1).
2. Besides being used as a textile fibre, tasar is reportedly in demand in China for ammunition bags, parachutes, acid-proof work clothes and equipment. It is also being used extensively in the manufacture of flexible cords and tyres. (3.2.1).
3. In Japan the use of tasar silk was mainly mixed with ordinary mulberry silk for the manufacture of neckties, obis (scarves), crepe-de-chine and luxurious apparel. (3.2.2).
4. Next only to Chinese Tasar, Indian Tasar occupies a position of prominence in the tasar map of the world. (3.2.3).
5. **Antheraea mylitta** is by far the most important commercial producer of tasar silk in India. (3.2.3).
6. The tasar silkworms of India are polyphagous and feed on a variety of food plants. (3.2.3).
7. Tasar industry is mainly concentrated in Bihar, Madhya Pradesh and Orissa. (3.2.3).
8. There are about a lakh of tasar rearers in the country. (3.2.3).
9. The production of tasar silk in India in 1964 was 2.24 lakhs of kgs. (3.3.1).
10. India produced 1.47 lakhs of kgs. of tasar silk waste in 1964. (3.3.2).
11. The only attention bestowed on the silkworms is at the time of preparation of eggs, transference of larvae from tree to tree to ensure adequate feed and at the harvest of cocoons. It is this peculiar feature of tasar culture which exposes the tasar worms to the vagaries of weather and natural enemies and introduces an element of uncertainty in harvests. This is one of the weak spots of the industry which calls for attention. (3.4.1).
12. The departmental supplies of disease free eggs being rather limited, seed procurement becomes an exercise which calls for

considerable experience and tradition skill in selection. (3.5.1).

13. It is the general experience among the tasar rearers that cocoons raised on sal trees **(Shorea robusta)** are the best. (3.5.1).

14. Controlled mating of moths does introduce the element of inbreeding depression and there appears to be a fear among the tribal rearers that the departmental seed does not give stable crops. (3.5.3).

15. The most appropriate time to collect cocoons is about 7 days after spinning. The preferable time for collection of cocoons is 8 - 10 A.M. and after 3 P.M. (3.5.7).

16. Tasar rearing is a precarious calling, the success of which depends to a large extent on the vagaries of weather during the progress of rearings. (3.6.1).

17. The marginal returns that the industry provides are too meagre to tempt men of moderate means into this avocation. The harvests normally range from 2 to 2 1/2 kahans of cocoons per rearer. (3.6.3).

18 The 'Mahajan' with his capacity for ready credit to the ever needy tribal rearer exerts a stranglehold on the cocoon producer by advancing moneys and binding the rearers to sell the produce at greatly unremunerative prices. This institution of 'Mahajan' has been menacing the orderly progress of this poor man's industry for decades. (3.7).

19 In the opinion of the Committee, marketing is the weakest link in the tasar industry as organised at present and deserves the most immediate attention of the State and Central Governments. (3.7).

20 Tasar culture — an unknown triba craft has of late acquired the status of an export industry earning valuable foreign exchange for the country. (3.8.1).

21. The U.S.A. has been accounting for nearly 75 % of our total exports of tasar fabrics. (3.8.1).

22. The setback in export performance (latter half of 1965) is rather disturbing and merits careful consideration of the State and Central Governments so that further deterioration could

be effectively stemmed by timely adoption of palliative measures. (3.8.2).

23. The fall in exports in recent months had led to the manifestation of distinctly bearish tendencies in the tasar markets. (3.9.3).

24. The quantity of tasar fabrics produced in India in 1964 could be estimated at 24 lakhs of metres. (3.10.1).

25. The Annual average of tasar silk fabrics exported during the past three years will work out to 5.63 lakhs of metres. (3.10.2).

26. The exports have accounted for less than 25 of the total output of tasar fabrics in the country during the past three years when the exports were at their peak levels. (3.10.3).

27. If the tasar prices are to be stabilised, tasar exports should be maintained at the highest possible levels by additional measures of export assistance, if necessary. (3.10.3).

28. If the present ratio of internal demand and exports should be maintained, the exports might reach a figure of 10 lakhs of metres at the end of 1970 to earn a foreign exchange of Rs. 120 to Rs. 130 lakhs at the most. (3.10.4).

29. The main bottleneck in the export supplies is limitation stemming from the handloom pattern of production. (3.10.5).

30. One of the causes for the set-back in tasar exports in 1962 was the export of sub-standard fabrics which to a considerable extent shattered the confidence of importers abroad. (3.11.1).

31. If anything there is a case for progressive reduction in the flexibility of this scheme (preshipment quality inspection scheme) so that exports of tasar fabrics of poor quality might be effectively curbed. (3.11.2).

32. During the I Five Year Plan, the Central Silk Borad had approved only 9 schemes for development of tasar silk industry and had sanctioned a central assistance amounting to Rs. 2.74 lakhs. (4.1).

33. During the II Five Year Plan, 35 schemes involving a central assistance of Rs. 28.65 lakhs were approved. The expenditure was Rs. 17.63 lakhs. (4.2.1).

34. A perusal of the schemes under implementation during the II Five Year Plan reveals that the accent was mainly on gene-

rating increased capacity to meet the seed requirements. But the fact remains that the host plant sector was totally neglected despite clear recommendations of the I Working Group as also the Non-mulberry Sub-Committee. This is rather disappointing. (4.2.4).

35. The actual provision for development of tasar industry alone during the III Five Year Plan was Rs. 90.53 lakhs. (4.3.1).

36. Bihar has not drawn up any scheme even during the III Plan for tackling the host-plant requirement of tasar rearings. (4.3.2).

37. On the basis of the production of 1,13,000 kahans of cocoons in 1965, the total requirement of dfls., for the State (Bihar) could be estimated at 28.25 lakhs. Against this the production is 3.67 lakhs of dfls. (13%) which cannot be deemed satisfactory. (4.3.2.1).

38. The period of training (in the training-cum-production centres) could be considerably reduced from its present duration of 6 months to 3 months. These centres should also be completely peripatetic. (4.3.2.2).

39. By and large the cooperatives in Bihar have proved a failure. The Committee is of the view that the Department should revitalise the societies and expand their scope of utility. (4.3.2.4).

40. The impact of the State's (Bihar) scheme to tackle the problems of marketing has been negligible. (4.3.2.5).

41. There is no cooperative organisation in the State (Madhya Pradesh) to tackle the marketing aspect. Instead six Government markets have been established. (4.3.3.4).

43. The apex society is assuring the rearers a reasonable return disease free layings (Orissa). (4.3.4.1).

43. The apex society is assuring the rearers a reasonable return by giving them a stable price fixed in a meeting of the representatives of primary and apex society. (4.3.4.4).

44. West Bengal ranks fourth among the tasar producing States in India. (4.3.5).

45. It is not quite clear why the Department is not utilising its full capacity for production of seed which is reported to be very popular with the rearers (West Bengal). (4.3.5.1).

46. There is considerable potential for tasar production in Andhra Pradesh in the districts of Adilabad, Karimnagar, Khammam, Warangal and Mahaboobnagar. (4.3.6).

47. The present output of tasar cocoons in Maharashtra has been estimated at 100 lakhs or 7812 kahans. The Committee feels that this estimate is rather on the high side. (4.3.7).

48. Even assuming that the actual annual production of tasar cocoons is 7812 kahans as stated by Maharashtra, the requirement of dfls., on the basis of 25 dfls. to produce one kahan of cocoons will come to less than 2 lakhs of dfls. (4.3.7).

49. Tasar industry in Uttar Pradesh is confined to Mirzapur district which adjoins the tasar belt of Bihar and Madhya Pradesh. (4.3.8).

50. Recommendations of the Sub-Committee on Non-mulberry Silk Industry set up by the Central Silk Board mainly related to host plants, have remained unimplemented by the States. This has operated as a setback to the progress of the industry. (4.4.1).

51. Experiments so far conducted have shown that tasar worms fed on **Shorea robusta** spin better cocoons with higher silk content. (4.4.5).

52. The Central Tasar Research Station, Ranchi has drawn up a very comprehensive programme of research in the IV Plan and unless the requisite facilities both by way of equipment, buildings and scientific personnel are provided well in time, the efforts are likely to be hampered. (4.4.5).

53. The Central Tasar Silkworm Seed Station at Lakha has no doubt shown considerable progress during the short period it has been functioning. (4.4.6).

54. 'Asan' and 'Arjun' are not protected trees and have been felled for fuel purposes during the past several decades leading to a progressive reduction in the availability of food plants for tasar rearings. (5.1.1).

55. What has not been sufficiently realised is that the host plants are not available in adequacy in the vicinity of human habitation to sustain large scale rearings. (5.1.2).

56. In districts where tasar industry is practised, cutting down of tasar food plants should be prohibited, if need be by legislation. (5.1.3(i)).

57. The question of utilising the facilities for afforstation under the soil conservation programmes in operation in some of the States is worth consideration. (5.1.3 (ii)).

58. The Committee suggests that nurseries may be set up by the Industries|Sericulture departments in consultation with the Forest Department so that a continuous supply of tasar food plants could be assured. (5.1.3 (iii)).

59. The question of getting the protected and unreserved forests for tasar rearing should receive the attention of the Industries Departments. (5.1.3 (iv)).

60. With a little imaginative cooperation between the Industries and Highway Departments, it should be possible to utilise the road-side trees which have the advantage of being close to the rearers' habitation. (5.1.3 (iv)).

61. The State Departments should evince interest in the experiment relating to use of 'Sal' leaves for tasar rearing and initiate field studies in collaboration with the Central Tasar Research Station, Ranchi. (5.1.3 (v)).

62. The total requirement of disease free layings for the Tasar States is 54 lakhs. The actual supply of disease free layings including seed cocoons is hardly 40% of the total requirement. This shows a serious hiatus in the organisation of the industry. (5.2.1).

63. The Technical Officers of the States seem to be of the view that at present infection of Pebrine was almost negligible. (5.2.2(1)).

64. It would not be correct to lay disproportionate emphasis on preparation of disease free seed just to keep off a possible outbreak of 'Pebrine'. (5.2.2 (i)).

65. Supply of seed cocoons rather than examined eggs could be adopted for the present for the commercial rearings. (5.2.2(i)).

66. Exclusive seed zones should be organised. (5.2.2(ii)).

67. The Committee feels that it would be worthwhile to attempt seed rearings in Reserve Forests so that the present availability of nature grown seed cocoons could be supplemented. (5.2.2 (iii)).

68. The study of heterosis to stabilise tasar crops should be intensified and a sence of urgency should be imparted to the experi-

ment so that tangible findings might be able in the near future. (5.2.2(iv)).

69. The Committee recommends that the Department of Industries|Sericulture should devise measures to meet the full requirement of seed cocoons **free of cost.** (5.2.2(v)).

70. The present methods of rearing are rather crude and irrational. What is however recommended is a little more attention to incubation of seed to ensure uniform hatching of worms, choice of host plants in keeping with the stage of growth of the larvae, maintenance of optimum larva-forage ratio etc. (5.3).

71. To ensure sufficiency of leaf of suitable quality, pollarding of host plants should be done on a rational basis. There is need for systematising this operation under expert direction of the departmental technicians. (5.3).

72. There was wide divergence of opinion among the States about the effective earnings of a tasar rearer. The Committee feels that the figures furnished by Orissa and Bihar (Bhagalpur region) more or less depict the actual position i.e. an income of Rs. 120 to Rs. 210 per rearer per annum. (5.4).

73. Having regard to the difficulties and risks of tasar rearings this monetary return is to be deemed rather low and quite insufficient to sustain the interest of even traditional tasar rearers. (5.4).

74. The Committee is of the view that one of the main factors which have impeded the orderly progress of tasar industry during the past several decades is the stranglehold exerted by the 'Mahajan' or 'Paikar' on the poor tribal rearers. (5.5.1).

75. The cost of production of 1 kahan of cocoons is Rs. 65 as follows :—

(i)	On account of seed	—	Re.	1.00	
(ii)	Dalkatti|Royalty	—	Rs.	3.25	
(iii)	Labour	—	Rs.	60.00	
	Total :	—	Rs.	64.25	or say
			Rs.	65.00	

(5.5.3).

76. The Committee feels that unless the actual producer of tasar cocoons is assured of the fair price of Rs. 65 per kahan, it will

be very difficult to sustain his interest in the pursuit of tasar culture. (5.5.5).

77. If the tempo of exports is to be sustained the exporters should also be enabled to get raw material (cocoons) at reasonable prices. Perhaps a price of Rs. 90. per kahan (Grade-I of 1280 cocoons) would enable the exporters to enter markets abroad with confidence. (5.6.1).

78. The marketing mechanism should be able to assure price of Rs. 65 per kahan to the rearers and sell cocoons to the manufacturers at Rs. 90 per kahan. (5.6.2).

79. The Mahajans give petty loans to the rearers in their times of need and bind them to sell their cocoons at predetermined prices which are invariably unremunerative. (5.6.3).

80. Bihar should send one or two of its technical officers to Orissa to make a complete study of the working of the cooperative societies for tasar so that the same pattern could be adopted with slight modifications to suit local requirements. (5.6.4).

81. The Committee recommends that the marketing scheme of the States should get more liberal provision of funds for purchase of cocoons. (5.6.5).

82. Even when the prices for tasar cocoons ruled at unprecedented levels above Rs. 160 per kahan, the rearer was still getting hardly Rs. 50 or Rs. 60 per kahan. (5.7.1).

83. In Bihar the 'daba' cocoons were being sold at Rs. 70 to Rs. 75 per kahan while in Madhya Pradesh the State Department had to announce a floor price of Rs. 50 per 1000 cocoons (Rs. 63 per kahan). Even in Orissa the prices were operating at Rs. 90 per kahan of 1600 cocoons. (5.7.1).

84. The Committee feels that the situation warrants the launching of price support operations on an extensive scale so that the price-depression might not permanently harm the future outlook for the industry. (5.7.1).

85. Regarding the price which should be offered to the rearer, the Committee feels that Rs. 65 per kahan of 1280 cocoons as suggested by Bihar and as arrived at by the Board's survey team will be reasonable. (5.7.1).

86. The Committee feels that even if the Cooperatives and Government markets were to enlarge their activities many fold it will be extremely difficult for them to effectively replace the

Mahajan. The effort is likely to prove time-consuming and the result is rather doubtful. (5.7.3).

87. A separate Corporation for purchase and sale of cocoons might prove to be too cumbersome to admit of efficient administration. (5.7.4).

88. If the prices for tasar cocoons are to be stabilised the State Trading Corporation may have to purchase about 30,000 kahans of cocoons during a year at the support price of Rs. 65 per kahan. (5.7.6).

89. The Committee suggests that the departments of Industries Sericulture etc. in the Tasar States should fully cooperate with the State Trading Corporation in its price support operations and if need be keep all their existing facilities like cocoon godowns, stifling equipment etc. at the disposal of the State Trading Corporation. (5.7.8).

90. The Committee felt that in case the States should so desire, the State Trading Corporation should at a later stage suitably expand its activities to include the tasar cocoon reeling and spinning aspects. (5.7.9).

91. The reeling as also the spinning equipment at present in use in the Tasar States was of an antiquated type (5.8.1).

92. The Committee feels that there is a case for increase of the subsidy element in the scheme of popularisation of the reeling-cum-twisting machines. This should be treated as a socio-economic measure for the general amelioration of the poor tribal rearers. (5.8.2).

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93. The pit loom is the most inefficient device for weaving and as such the departments concerned should immediately initiate action quick change-over to more modern methods of weaving. (5.9.1).

94. Experiments should be initiated to find out the possibilities of giving 'silicon finish' to the tasar fabrics. (5.10.1).

95. The Institute at Bhagalpur should be fully equipped and staffed with adequately trained technical officers so that the problems of the industry which might crop up in future might be more effectively tackled. (5.11.1).

96. Efforts should be made to set up Cooperative Credit Societies with a view to affording necessary financial relief to the tribal rearers at times of need. (5.12.1).

97. There is urgent need to revive the proposal of the Central Silk Board to appoint a Senior Officer to effectively coordinate the development work relating to tasar industry in the Tasar States. (5.13.1).

98. There should be well-knit organisation with the Central Tasar Research Station at Ranchi as the driving force and with a few field units in the States so that coordinated experiments to resolve regional problems could be laid out on systematic lines (5.14.1).

99. Immediate action should be taken to ensure coordination of work among the units at Ambikapur (Madhya Pradesh), Baripada (Orissa) and the Central Tasar Research Station, Ranchi. (5.14.1).

100. Export assistance should be further liberalised by giving a total cash incentive of 25% so that Indian Exporters could enter the American and European markets with confidence. (5.15.4).

101. It is the exports which will impart a stability to the industry and no efforts should be spared to put our tasar exports on sound basis. (5.15.5).

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APPENDIX - I

Questionnaire Issued by the Committee

I. General

Question 1. What is the estimated number of tasar rearers in your State? Is the number increasing or has it declined during the III Plan period? Have the causes for such changes, if any, been appraised by the State department?

II. Food Plants

Question 1. Please indicate the extent to which the food plant wealth available in the State is effectively utilised for tasar rearing. Please specify separately the traditional tasar rearing zones and zones which have been selected for introduction of tasar.

Question 2. Has any attempt been made to provide compact blocks for the rearers to concentrate their attention on tasar rearing? What facilities are provided for the upkeep of the plantation?

Question 3. Are large blocks of tasar food plants available in the forest areas? Are there any restrictions for the free use of these food plants in the forest? If so, please enumerate the steps taken by the State Government to overcome them.

III. Seed Production

Question 1. What is the present estimated requirement of seed in the State? Please indicate the percentage of supply by the departmental organisation. Information may also be furnished in the following form.

(in disease free layings)

I Plan 1955		II Plan 1960		III Plan 1965		IV Plan	
Requirement of seed.	Actual supply by the Dept.	Requirement of seed.	Actual supply by the Dept.	Requirement of seed.	Actual supply by the Dept.	Estimated requirement	Estimated supply

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Question 2. Is there any resistance from the tribal rearers to take departmental seed? Please indicate the steps taken by the State Government to popularise the departmental seed among the tasar silkworm rearers.

Question 3. What is the present method of supply of seed? Please mention whether it is in the form of eggs as in the case of mulberry silk industry or in the form of seed cocoons.

Question 4. How many seed stations have been organised during the past three Plans? Please indicate the capacity of each station and also the output of seed.

Question 5. Please indicate the present production technique in vogue for the preparation of seed. In the light of the experience gained during the past Plans, what steps have been taken for rationalising the seed production technique and to make it simpler to meet the peculiar needs of the tasar industry?

Question 6. How many crops are raised in the State? Please also indicate the average quantity of seed or seed cocoons kept by each rearer for each crop.

Question 7. Are there any seed zones specially apportioned for the preparation of tasar seed? Details of seed zones if any may be furnished indicating in particular their capacity for production.

Question 8. Seed production is a seasonal work. Please indicate how the staff employed in the seed station are utilised during the off-season.

IV. Production of Industrial Tasar Cocoons

Question 1. What is the present output of tasar cocoons (Industrial) in your State? Please indicate the figure in kahans.

Question 2. Are industrial cocoons fully utilised for reeling|spinning in the State or is there any outflow of cocoons to the neighbouring States? In the latter case indicate the extent of outflow and the State.

Question 3. What is the present output of tasar silk in the State (in kg)?

V. Reeling & Spinning

Question 1. What are the present methods in vogue for reeling and spinning? The Bhagalpur trials conducted by the Central Silk Board had revealed that the Trivedi 4 spindle reeling-cum-twisting machine was ideally suited for reeling tasar cocoons while the automatic pedal spinning machine was the best for spinning of tasar waste. Please indicate whether any action has been taken by the State Government to popularise these models for reeling and spinning of tasar in your State. The present number of these models in use in the State may also be indicated.

Question 2. Please indicate the present working of the production-cum-training centres in the State. How many technicians have been trained in reeling and spinning aspects at these centres during the past several Plans?

VI. Marketing & Co-operation

Question 1. Please indicate the number of organisations|cooperatives set up for the benefit of tasar rearers for the disposal of the cocoons. Furnish full details of each organisation|cooperative — location, capacity, number of rearers covered, working and share capital, quantity transacted since its inception etc.

Question 2. Please indicate the handicaps facing the marketing organisation in your State and suggest measure for the improvement of the present system.

Question 3. The Central Silk Board had proposed the setting up of a Marketing Corporation under the conjoint auspices of the Tasar States with a view to improving the marketing facilities for tasar cocoons and assuring a reasonable return to the primary producers. Please give your reaction to the proposal.

VII. Economics

Question 1. What are the average returns of a tasar silkworm rearer by sale of cocoons? Please indicate the steps that are necessary for ensuring minimum price for his cocoons.

Question 2. Please furnish the important weaving centres for tasar fabrics intended for export with the number of handlooms or powerlooms at each centre.

Question 3. There is an acute shortage of hand spun yarn for manufacture of fabrics required for export. Please indicate what measures could be immediately adopted by the State organisation concerned to build up the production of this particular type of yarn to meet the export demands.

Question 4. What further inducements do you think necessary for tasar silkworm rearer|reeler|weaver to increase the present capacity so that there is adequate supply of raw material for the manufacture of export fabrics?

Question 5. Please indicate whether any price support scheme is operated by the State department for the benefit of the rearer or reeler.

VIII. Staff

Question 1. Please indicate the total staff (technical and administrative separately) employed under the department in different categories like gazetted, non-gazetted and other subordinate staff. The number of technical personnel who have undergone any special training and the type of training may please be furnished for each category.

Question 2. Please also indicate the number of technical staff who hail from tribal or scheduled classes.

Question 3. An organisational chart showing the placement of staff may please be furnished.

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IX. Map.

A map of your State showing the location of the department institutions may please be attached.

APPENDIX-II

Exports of Tasar Silk Fabrics During 1964 and 1965

(Qty. in Sq. Mtrs. Value in Rs.)

Country	Jan-Dec. 1964		Jan-Dec. 1965	
	Qty.	Value	Qty.	Value
U. S. A.	4,62,650	60,50,571	4,37,600	55,94,677
Hong Kong	74,337	9,37,015	47,580	5,92,379
West Germany	15,935	2,43,578	18,506	3,00,500
Canada	14,267	1,87,475	5,201	80,688
France	10,426	1,60,500	1,712	25,362
Sweden	10,751	98,435	5,942	1,12,330
Switzerland	7,966	1,17,444	4,013	63,356
U. K.	6,126	95,089	5,436	85,616
Belgium	664	9,832	860	15,628
Denmark	541	7,657	765	12,122
Greece	115	1,972	505	7,747
Austria	—	—	188	2,839
Lebanon	894	8,886	378	5,506
Japan	8,912	1,28,930	8,071	1,34,398
Australia	16,460	2,45,890	6,001	92,126
Holland	169	2,628	845	12,265
Italy	2,340	35,553	404	6,665
Singapore	929	12,416	600	7,961
Finland	136	2,677	248	4,908
Aden	2,155	15,378	2,740	19,996
Doha Qatar	—	—	85	1,522
New Zealand	—	—	317	4,612
Cyprus	—	—	225	3,653
East Germany	1,982	28,510	—	—
Kuwait	2,432	45,023	—	—
West Indies	401	4,988	—	—
Canary Islands	24	275	—	—
Libya	43	758	—	—
Kenya	20	489	—	—
Mariana Island	227	3,227	—	—
TOTAL :	6,40,902	84,45,196	5,48,222	71,86,856

APPENDIX - III

Statement Showing the State-wise Allocation of Central Assistance and Expenditure for Tasar Silk Industry During II Five Year Plan.

(Rupees in lakhs)

S. No.	State	Actual No. of schemes implemented	Total Central assistance	Expenditure out of Central assistance					Total
				1956–57	1957–58	1958-59	1959–60	1960–61	
1.	Bihar	13	16.19	0.84	1.65	3.30	1.72	3.16	10.67
2.	Madhya Pradesh	4	0.62	0.11	0.46	0.05	—	—	0.62
3.	Orissa	9	6.52	0.13	1.36	0.45	0.40	0.77	3.11
4.	West Bengal	2	2.16	—	0.02	0.03	0.07	0.45	0.57
5.	Andhra Pradesh	5	1.74	—	0.02	0.41	0.45	0.61	1.49
6.	Maharashtra	1	0.90	—	—	—	0.32	0.27	0.59
7.	Assam	1	0.52	0.19	0.12	0.08	0.11	0.08	0.58
	Grand total..	35	28.65	1.27	3.63	4.32	3.07	5.34	17.63

APPENDIX III (Cont.)

Statement Showing the Schemes under Progress in the Tasar States for Development of Tasar Industry During II Five Year Plan.

BIHAR (Figs. in Rs.)

S. No.	Name of Scheme	1956–57		1957–58		1958–59		1959–60		1960–61		TOTAL	
		Central Assistance	Expenditure	Central Assistance	Expenditure	Central Assistance	Expenditure	Central Assistance	Expenditure	Central Assistance	Expenditure	Central Assistance	Expenditure
1	Establishment of Tasar Seed Supply Station, Chaibasa.	62,000	42,370	48,000	44,069	21,000	21,000	23,160	28,194	25,600	25,640	1,79,760	1,61,273
2	Tasar Seed Supply Spinning & Reeling Demonstration at Dalton Ganj.	63,779	8,123	58,750	23,710	41,400	32,187	20,000	23,253	30,250	35,183	2,14,179	1,22,456
3	Estt. of 2 Tasar Seed Supply Stations at Bengabad and Govinpur.	78,228	19,716	34,500	37,352	22,456	41,096	26,788	29,116	26,788	43,607	1,88,760	1,70,887
4	Estt. of 10 Tasar Seed Supply Sub-Stations.	57,840	9,993	30,700	25,105	30,680	25,034	37,600	35,462	37,600	30,000	1,94,420	1,25,594
5	Estt. of 3 new Tasar Seed Supply Stations.	—	—	—	—	—	—	56,130	12,688	1,54,000	47,265	2,10,130	59,953
6	Training-cum-Production centres for Tasar Reeling & Spinning.	35,125	3,075	7,970	7,970	17,570	17,744	21,090	17,319	17,190	17,470	98,945	63,578
7	Introduction of Improved Reeling Machines.	—	—	—	—	—	—	29,800	1,023	38,408	45,839	68,208	46,862
8	Training of Addl. staff for the development of Sericulture.	—	—	—	—	10,000	8,500	18,000	12,728	3,600	3,300	31,600	24,528

1	2	3	4	5	6	7	8	9	10	11	12	13	14
9	Introduction of Tasar as Basic Craft in Schools in Palamau.	—	—	—	—	11,850	—	6,792	406	2,264	3,392	20,906	3,798
10	Re-organisation of Govt. Silk Institute Nathnagar.	—	—	—	—	—	—	77,560	—	—	42,032	77,560	42,032
11	Marketing Organisation for Purchase of Cocoons.	—	—	—	—	1,75,500	1,32,400	20,000	7,596	13,060	6,764	2,08,560	1,46,780
12	Organisation of Tasar Rearers Co-operative Societies.	—	—	28,530	26,250	54,780	52,500	2,280	—	—	—	85,590	78,750
13	Estt. of 3 Tasar Seed Supply Sub-Stations.	—	—	—	—	—	—	9,366	4,641	30,846	15,900	40,212	20,541
	GRAND TOTAL :	2,96,972	83,277	2,08,450	1,64,456	3,85,236	3,30,461	3,48,566	1.72,426	3,79,606	3,16,392	16,18,830	10,67,012

MADHYA PRADESH

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Construction of Well in Gharghoda.	—	—	—	—	5,400	5,400	—	—	—	—	5,400	5,400
2	Development of Tasar Industry.	38,315	9,000	5,000	46,074	—	—	—	—	—	—	43,315	55,074
3	Scheme for supply of Reeling and Tasar Spinning machine.	4,363	1,800	—	—	—	—	—	—	—	—	4,363	1,800
4	Supply of improved Tasar Silk Waste Spinning Machine.	570	530	—	—	—	—	—	—	—	—	570	530
5	Introduction of Tasar Industry as basic craft in schools.	8,500	—	—	—	—	—	—	—	—	—	8,500	—
	TOTAL :	51,748	11,330	5,000	46,074	5,400	5,400	—	—	—	—	62,148	62,804
ORISSA													
1	Tasar Seed Station.	25,718	565	42,431	30,355	6,412	5,214	6,254	7,530	6,440	5,896	87,255	49,560
2	Supply of improved appliances.	5,000	5,000	—	—	—	—	5,000	5,000	5,000	—	15,000	10,000
3	Research in Sericulture.	—	—	7,054	1,000	4,702	818	7,475	6,894	4,652	4,451	23,883	13,163
4	Peripatatic Demonstration.	3,315	746	8,945	2,657	6,500	3,941	7,062	5,323	6,610	5,296	32,432	17,963
5	Improvement of Design for Tasar Fabric.	3,065	2,906	—	—	—	—	—	—	—	—	3,065	2,906
6	Organisation of Tasar (Rearers') Co-operative Society.	37,500	86	37,414	36,514	30,821	6,574	29,917	6,421	29,700	6,950	1,65,352	56,545
7	Central Tasar Depot.	—	—	64,452	61,950	71,960	19,748	56,864	4,734	1,04,897	54,541	2,98,173	1,40,973
8	Organisation of Farmers' Day.	—	—	3,600	3,600	3,600	3,600	3,600	3,600	1,800	—	12,600	10,800
9	Training of Officers and Study Tours.	4,250	3,500	—	—	5,000	5,000	—	—	5,000	—	14,250	8,500
	TOTAL :	78,848	12,803	1,63,896	1,36,076	1,28,995	44,895	1,16,172	39,502	1,64,099	77,134	6,52,010	3,10,410

WEST BENGAL

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Introduction of tasar silkworm rearing among tribal people.	6,370	—	10,175	2,110	4,850	2,923	12,000	6,548	8,000	3,742	41,395	15,323
2	Development of tasar Industry in Purulia.	—	—	—	—	—	—	25,000	—	1,50,000	41,451	1,75,000	41,451
ANDHRA PRADESH													
1	Revival of tasar Industry in Manthain.	10,660	—	—	—	—	—	—	—	—	—	10,660	—
2	Establishment of Tasar Seed Station at Venkatapuram.	—	—	—	—	—	—	—	—	12,347	12,955	12,347	12,955
3	Establishment of Tasar Seed Station Mahadevpur.	21,545	—	—	851	15,984	13,781	11,141	28,656	16,622	22,769	65,292	66,057
4	Tasar Seed Station	20,565	—	—	1,437	23,615	26,531	12,186	13,645	17,030	14,382	73,396	55,995
5	Organisation of Tasar Culturists' Day.	—	—	750	181	750	315	750	608	500	600	2,750	1,704
6	Peripetatic demonstration party in Chinoor area, Adilabad Dist.	—	—	—	—	—	—	—	2,329	10,000	10,293	10,000	12,622
	Total	52,770	—	750	2,469	40,349	40,627	24,077	45,238	56,499	60,999	1,74,445	1,49,333
MAHARASHTRA													
1	Development of Tasar Industry in Vidarbha.	—	—	—	—	—	—	40,550	31,980	49,340	26,584	89,890	58,564
ASSAM													
1	Scheme for Tasar Rearing	2,473	19,196	13,406	12,352	11,000	7,888	14,500	10,516	10,130	8,204	51,509	58,256

APPENDIX - IV

TASAR SILK COMMITTEE

Statement Showing the State-wise Allocation for Tasar Industry During the III Plan.

(Rs. in lakhs)

S. No.	State	No. of tasar schemes	Total Plan Provision	Estimated cost for 3rd Plan.	Expenditure					Total
					1961-62	1962-63	1963-1964	1964-1965	1965-1966 (30-9-65)	
1.	Bihar	15	60.00	44.07	0.870	1.140	3.210	6.121	1.785	13.126
2.	Madhya Pradesh	9	23.80	19.90	0.950	1.710	3.290	7.820	0.750	14.520
3.	Orissa	10	12.00	10.94	1.454	3.114	1.287	2.126	0.488	8.469
4.	West Bengal	1	79.00	6.25	0.300	0.070	0.420	0.320	0.165	1.275
5.	Andhra Pradesh	9	15.00	8.73	0.440	0.470	0.910	0.682	0.313	2.815
6.	Maharashtra	1	0.25	0.25	—	—	—	(0.081)	—	0.081
7.	Uttar Pradesh	1	35.00	0.39	0.020	0.070	0.080	0.100	0.033	0.305
	Grand Total :	46	225.05	90.53	4.034	6.574	9.197	17.250	3.536	40.591

APPENDIX - IV (Continued)

Statement showing the list of tasar schemes presently under implementation in the States of Bihar, Madhya Pradesh, Orissa, West Bengal, Andhra Pradesh, Maharashtra and Uttar Pradesh.

I. BIHAR

(Rs. in lakhs)

Scheme	Estimated cost of the scheme for 3rd Plan	Progress of expenditure.					Total
		1961-62	1962-63	1963-64	1964-65	1965-66 (upto Sept. '65)	
1	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SEED ORGANISATION :							
1. Establishment of seven tasar seed supply stations.	9.030	0.190	0.150	0.820	0.863	0.424	2.447
2. Establishment of twenty tasar seed supply sub-stations.	7.970	0.210	0.310	0.510	0.820	0.352	2.202
3. Augmenting production of dfls. of tasar in the existing stations and training-cum-production centres.	0.660*	—	—	—	0.560	—	0.560
4. Establishment of ten training-cum-production centres.	4.500	0.100	0.190	0.250	0.374	0.261	1.175
5. Introduction of tasar industry as basic craft in schools.	0.960	—	—	—	0.069	0.050	0.119
6. Training of additional staff.	0.610	0.020	0.040	0.070	0.080	0.063	0.273
7. Organisation of sixty tasar rearers' co-operative societies.	3.480	—	—	0.400	1.198	0.062	1.660

(BIHAR Continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
8. Provision of staff and equipment for tasar rearers' Co-operative Societies.	0.890	—	—	0.080	0.183	0.010	0.273
9. Marketing organisation for purchase of tasar cocoons.	1.790	—	—	0.200	0.023	0.033	0.256
10. Organisation of retail distribution centres.	0.330*	—	—	—	0.004	0.037	0.041
11. Provision for staff quarters.	3.200	—	—	—	—	—	—
12. Publications of books and periodicals.	0.450	—	0.020	0.050	0.030	—	0.100
13. Appointment of supervisory staff.	1.610	—	—	0.060	0.195	0.116	0.371
14. Pilot Project for tasar.	3.980	0.140	0.020	0.250	0.554	0.255	1.219
15. Establishment of two training centres in improved reeling.	4.610	0.210	0.410	0.520	1.168	0.122	2.430
Grand Total :	44.070	0.870	1.140	3.210	6.121	1.785	13.126

* Schemes proposed and approved under short-term programme formulated during 1962-63 for stepping up production of tasar silk for the purpose of tasar fabric export.

II. MADHYA PRADESH

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Establishment of six tasar seed farms.	9.000	0.480	0.560	1.170	3.000	0.340	5.550
* 2. Expansion of seed farm-Gharghoda	—	—	—	—	—	—	—
3. Procurement of tasar seed cocoons.	0.100			—	—		—
4. Establishment of two tasar seed farms.	0.750		0.120				0.120
* 5. Development of kosa silk industry (Tasar).	0.950	0.100	0.120	1.100	0.160	0.080	1.560
6. Establishment of tasar silk centres at Tamnar & Raigarh.	0.100	0.070	—	0.040	0.060	0.020	0.190
7. Tasar Silk Reeling & Spinning factory.	3.000	—	0.030	0.210	0.740	0.120	1.100
8. Establishment of a field research station, Ambikapur.	1.000	—	0.010	0.030	0.160	0.030	0.230
9. Establishment of six tasar cocoon markets.	5.000	0.300	0.870	0.740	3.700	0.160	5.770
Grand Total :	19.900	0.950	1.710	3.290	7.820	0.750	14.520

* Non-Plan schemes were transferred to Plan programme during 1964-65.

III. ORISSA

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Establishment of tasar seed sub-stations.	3.450	—	0.410	0.380	1.442	0.151	2.383
2. Establishment of tasar seed sub-station.	—	—	0.210	—	—	—	0.210
3. Establishment of tasar reeling and spinning centre, Nuapatna.	1.250	—	0.150	0.410	0.154	0.047	0.761
4. Supply of improved appliances.	0.200	—	0.050	0.050	0.100	—	0.200
5. Research in Sericulture.	0.700	0.070	1.110	0.260	0.223	0.072	1.735
6. Central Tasar Depot.	1.520	1.160	0.105	—	—	—	1.265
7. Organisation of tasar rearers co-operative societies.	2.760	0.110	0.950	—	—	—	1.060
8. State Tasar Co-operative Society Ltd.	—	—	—	Refer Scheme No. 6			—
9. Strengthening of staff for supervision of tasar rearers' co-operative societies.	—	—	—	—	0.029	0.111	0.140
10. Headquarters staff for administration of sericulture.	1.060	0.114	0.129	0.187	0.178	0.107	0.715
Grand Total :	10.940	1.454	3.114	1.287	2.126	0.488	8.469

IV. WEST BENGAL

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Development of tasar industry.	6.250	0.300	0.070	0.420	0.320	0.165	1.275

V. ANDHRA PRADESH

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Scheme for preservation of food plants of tasar silk-worms in the forest land taken over from forest department.	0.420	0.010	0.060	0.100	0.061	0.030	0.261
2. Scheme for organisation of a field experimental unit to study the different varieties of food plants of tasar silk-owrm.	0.550	0.040	0.030	0.070	0.130	0.040	0.310
3. Scheme for establishment of tasar seed station, Chinoor.	0.720	0.030	0.040	0.060	0.109	0.130	0.369
4. Scheme for establishment of seed supply station with reeling facilities, Kosigi area.	1.760	0.150	0.110	0.150	0.156	0.070	0.636
.5 Augmenting the supply of tasar seed to rearers.	0.200	—	—	0.050	0.025	—	0.075
6. Scheme for procurement of tasar cocoons.	1.330	—	—	—	—	—	—
7. Scheme for reeling and spinning of tasar silk yarn.	0.100	—	—	0.100	—	—	0.100

(ANDHRA PRADESH Continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
8. Scheme for setting up training-cum-production centres at Venkatapur, Venkatapuram and Mahadevpur.	2.400	0.210	0.200	0.280	0.134	0.030	0.854
9. Scheme for establishment of marketing organisation at Chinoor for tasar cocoons.	1.250	—	0.030	0.100	0.067	0.013	0.210
Grand Total :	8.730	0.440	0.470	0.910	0.682	0.313	2.815
VI. MAHARASHTRA							
Procurement and distribution of tasar seed cocoons.	0.250	—	—	0.031	0.050	—	0.081
VII. UTTAR PRADESH							
Pilot Project scheme in Mirzapur (Tasar).	0.390	0.020	0.070	0.080	0.100	0.035	0.305

APPENDIX-V

Statement showing the Co-operatives in Tasar Industry in Bihar.

S. No.	Location	No. of rearers covered	Working Capital	Share Capital	Qty. tran-sacted	Re-marks
	Tasar Rearers Co-operative Societies		Rs.	Rs.		
1.	Jorapokhar (Singhbhum))	139	5,945	4,930	N.A.	
2.	Makranda (Singhbhum)	77	450	1,460	„	
3.	Morang (Singhbhum)	104	Nil	2,040	„	
4.	Hatgamaria (Singhbhum)	101	3,790	2,100	„	
5.	Ukumu-dkam (Singhbhum)	100	680	1,000	„	
6.	Audhari (Singhbhum)	100	Nil	—	„	
7.	Sonua (Singhbhum)	100	Nil	—	„	
8.	Kokcho (Singhbhum)	114	Nil	200	„	
9.	Matkamhatu (Singhbhum)	40	Nil	400	„	
10.	Barkella (Singhbhum)	25	Nil	275	„	
11.	Janta (Singhbhum)	20	Nil	200	„	
12.	Baralagia (Singhbhum)	20	Nil	200	„	
13.	Toirea (Singhbhum)	43	Nil	275	„	
14.	Nugri (Singhbhum)	23	Nil	88	„	
15.	Beramundi (Singhbhum)	15	Nil	100	„	
16.	Kuchai (Singhbhum)	112	Nil	671	„	
17.	Unduda (Singhbhum)	N.A.	Nil	—	„	
18.	Pokam (Singhbhum)	N.A.	Nil	—		
19.	Nakradungri (Singhbhum)	48	Nil	—		
20.	Ghakri (Singhbhum)	N.A.	Nil	—		
21.	Indobani (Singhbhum	17	Nil	—		
22.	Tasar rearers Co-operative Societies Mohanpur (S.P.)	34	Nil 1,650	— 1,040		
23.	Ghamigora (Santhal Parganas)	25	1,250	575		
24.	Babupur Parsa (Santhal Parganas)	40	2,000	880		
25.	Goraimoke (Santhal Parganas)	26	Nil	52		
26.	Banspahar (Santhal Parganas)	30	Nil	60		
27.	Dhowarni (Santhal Parganas)	40	Nil	400		
28.	Pachbara (Santhal Parganas)	30	Nil	150		
29.	Sugapahari (Santhal Parganas)	30	Nil	300		
		1453	15,765	17,396		

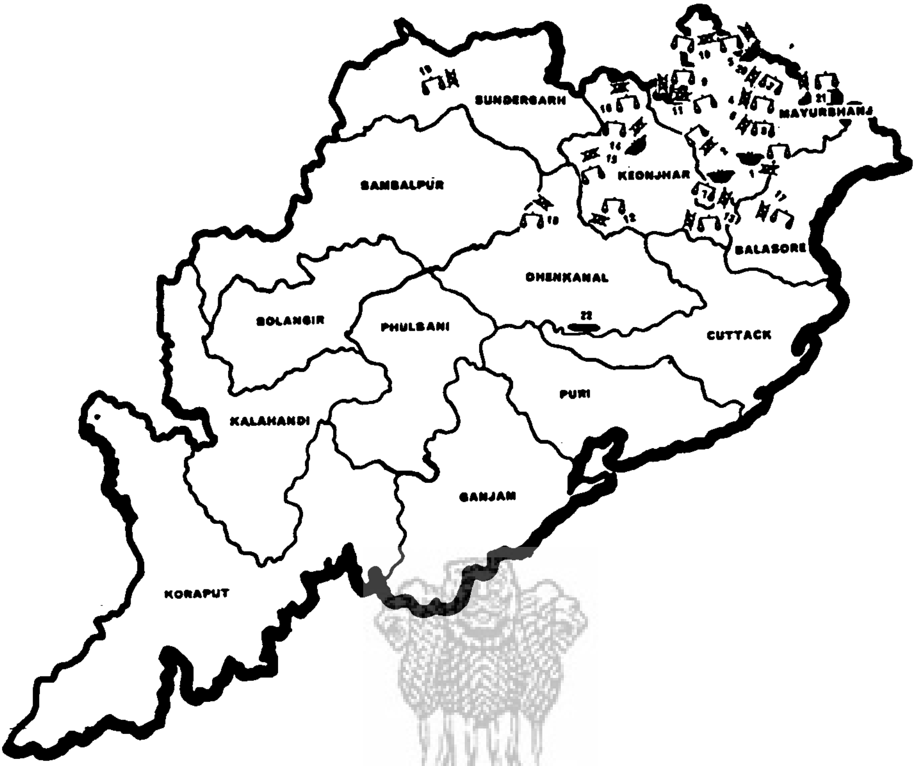
There was target to enroll 100 members in each co-operative society.

सत्यमेव जयते

Co-operatives in Tasar Industry in Orissa.

District	Name of Co-operative Society	Location	No. of rearers covered	Working & Share Capital loan of the society	Total Qty. of cocoons transacted by the Society from its inception.	Value there of	Remarks
				Rs.		Rs.	
Mayurbhanj	1. Kaptipada	Kaptipada	488	27,000	K. 3628-10-9	2,10.679.35	
-do-	2. Shyamsundarpur	Shyama-Sundarpur	1198	52,000	K. 6288-7-8	4,03,909-26	
-do-	3. Chandua	Chandua	1466	37,000	K 3990-4-4	2,18,538.64	
-do-	4. Bhuasuni	Bhuasuni	998	37,000	K. 8278-7-8	1,78,904.45	
-do-	5. Pokharia	Pokharia	752	37,000	K. 2198-6-13	1,21,477.90	
-do-	6. Kuliana	Kuliana	535	27,000	K. 1039-12-1	56,508.97	
-do-	7. Thakurmunda	Thakurmunda	590	37,000	K. 1944-9-18	1,29,066.67	
-do-	8. Baincha	Baincha	729	34,000	K. 633-18-9	69,623.19	
-do-	9. Khansapal	Khansapal	294	34,000	K. 109-2-11	10,081.83	
-do-	10. Besoi	Besoi	176	34.000	K. 28-4-15	1,772.82	
-do-	11. Nuagaon	Bhuasuni	269	34.000	K. 150-4-11	10,627.30	
Keen-Jhar	12. Telkoi	Telkoi	542	32,400	K. 2186-11-6	73,866.36	
-do-	13. Anandpur	Anandapur	484	33,144	K. 1143-1-15	54,348.93	
-do-	14. Dhenkikote	Dhenkikote	1275	77,000	K. 3715-14-19	2,50,832-39	
-do-	15. Keonjhar	Maidanka	1468	34,000	K. 671-11-12	49,562.16	
-do-	16. Jhumpura	Malda	415	34,000	K. 688-7-7	57,968.37	
Balasore	17. Nilgiri	Chatrapur	29	34,000	—	—	More members are being recruited
Dhenkanal	18. Pallahara	Pallabhara	93	34,000	—	—	
Cutak	19. Sukinda	Duburi	44	34,000	—	—	
Sundergarh	20. Bargaon	Bargaon			Final organisation is in progress. A sum of Rs. 14,000 is being given to each society.		
-do-	21. Bisra	Bisra					
Dhenkanal	22. Kamakshyangar	Kamakshyangar.					

सत्यमेव जयते



सत्यमेव जयते

TASAR INDUSTRY IN ORISSA

TASAR SEED SUPPLY STATION

District		Location
MAYURBHANJ	1	Kapatipada
★	7	Thakurmunda
★	20	Bangriposi
KEONJHAR	14	Dhenkikote

FIELD RESEARCH STATION

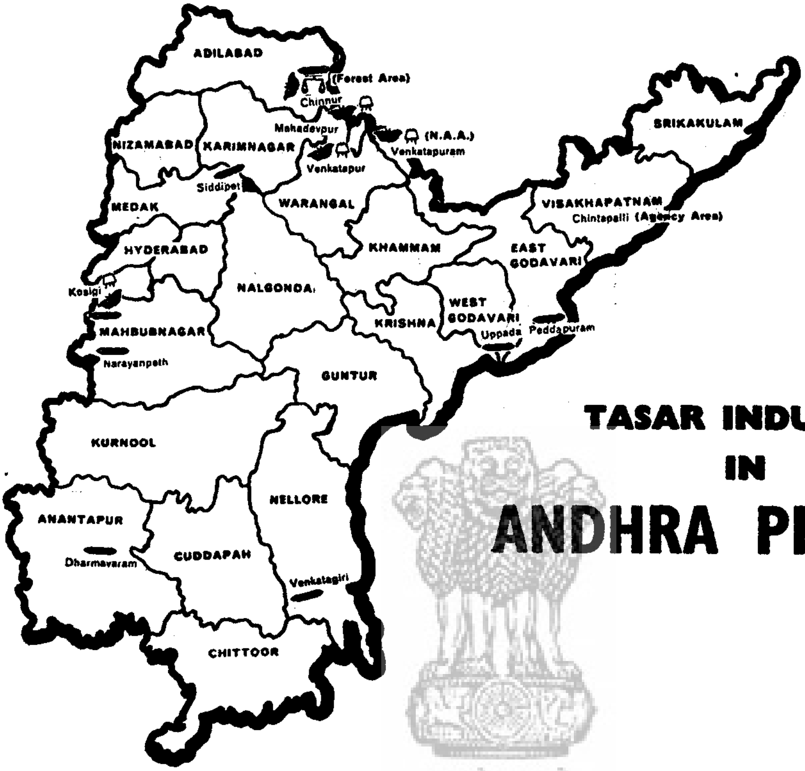
MAYURBHANJ	21	Baripada

WEAVING CENTRE

DHENKANAL	22	Nuapatana

CO-OPERATIVE & MARKET

MAYURBHANJ	1	Kapatipada
★	2	Shyamsunderpur
★	3	Chandua
★	4	Bhuasani
★	5	Pokharia
★	6	Kuliana
★	7	Thakurmunda
★	8	Baincha
★	9	Khensapal
★	10	Besoi
★	11	Nuagaon
KEONJHAR	12	Telkoi
★	13	Anandapur
★	14	Dhenkikote
★	15	Maidankel
★	16	Jhumpura
BALASORE	17	Nilgiri
DHENKANAL	18	Pallahara
SUNDERGARH	19	Bargaon
MAYURBHANJ	21	Baripada



TASAR INDUSTRY
IN
ANDHRA PRADESH

सत्यमेव जयते

TASAR SEED SUPPLY STATION

District	Location
ADILABAD	Chinnur
KARIMNAGAR	Mahadevpur
WARANGAL	Venkatapur
EAST GODAVARI	Venkatapuram
MAHBUBNAGAR	Kosigi

TRAINING CUM-PRODUCTION CENTRE

WARANGAL	Mahadevpur
★	Venkatapur
EAST GODAVARI	Venkatapuram
MAHBUBNAGAR	Kosigi

WEAVING CENTRE

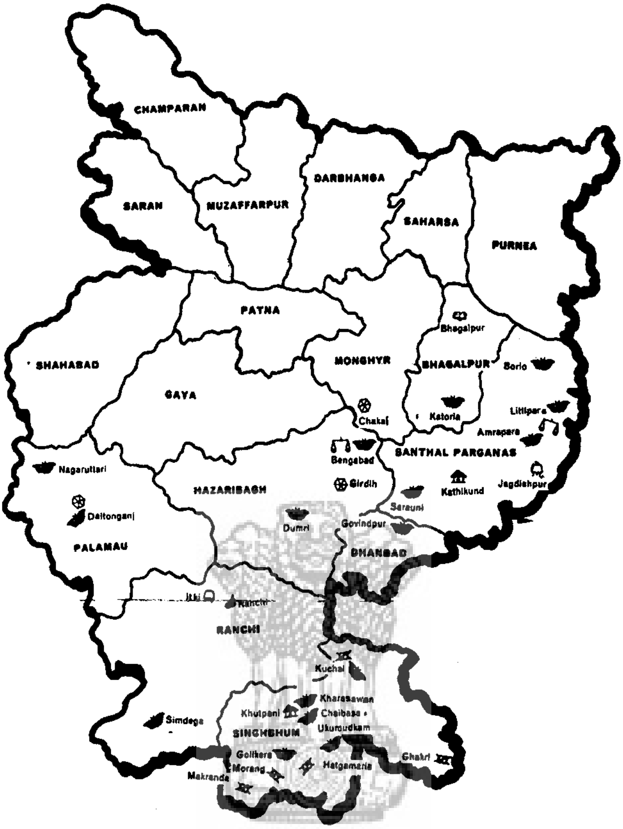
ADILABAD	Chinnur
MAHBUBNAGAR	Kosigi
★	Narayanpeth
MEDAK	Siddipet
WEST GODAVARI	Uppada
EAST GODAVARI	Peddapuram
ANANTAPUR	Dharmavaram
NELLORE	Venkatagiri

MARKET

	Chinnur

(AGENCY AREA)

VISAKHAPATNAM	Chintepalli



TASAR INDUSTRY IN BIHAR

TASAR SEED SUPPLY STATION

District	Location
SANTHAL PARGANAS	Borio
*	Littipara
*	Amrapara
*	Sarauni
BHAGALPUR	Katoria
HAZARIBAGH	Bengabad
*	Dumri
PALAMAU	Nagaruttari
*	Daltonganj
RANCHI	Simdega
SINGHBHUM	Kuchai
*	Kharasawan
*	Chaibasa
*	Hatgamaria
*	Goilkera
*	Bharbharia
DHANBAD	Govindpur

TRAINING INSTITUTE

BHAGALPUR	Bhagalpur

TRAINING CUM-PRODUCTION CENTRE

District	Location
SANTHAL PARGANAS	Jagdishpur
RANCHI	Itki

REELING UNITS

PALAMAU	Daltonganj
MONGHYR	Chakai
HAZARIBAGH	Girdih

PILOT PROJECT

SANTHAL PARGANAS	Kathikund
SINGHBHUM	Khutpani

CO-OPERATIVE

SINGHBHUM	Kuchai
*	Hatgamaria
*	Ghakri
*	Ukumudkam
*	Audhari
*	Morang
*	Makranda

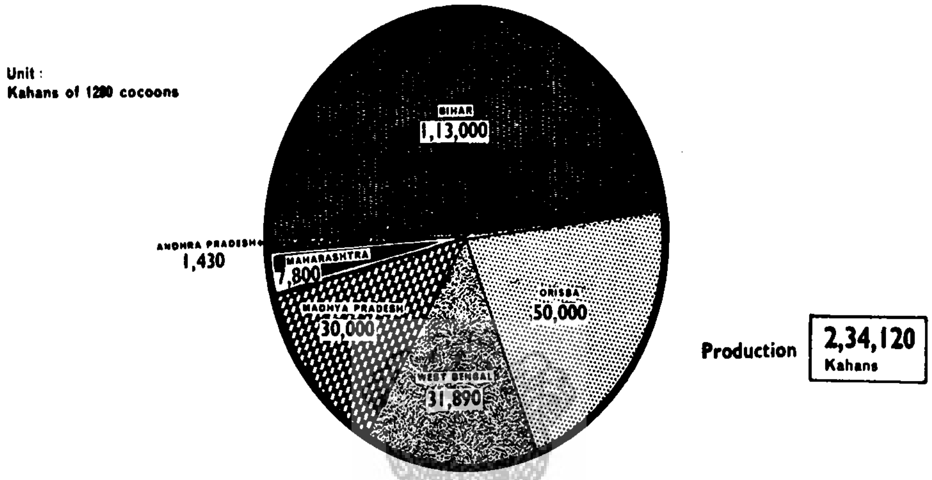
TASAR RESEARCH STATION

RANCHI	Ranchi

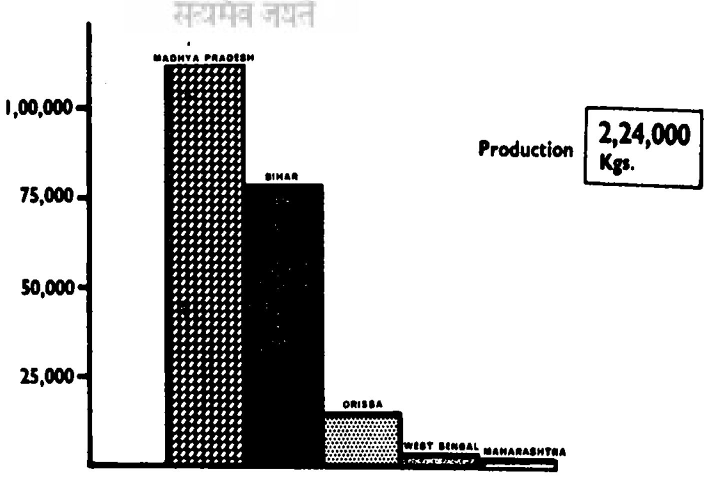
MARKET

SANTHAL PARGANAS	Amrapara
SINGHBHUM	Chaibasa
HAZARIBAGH	Bengabad

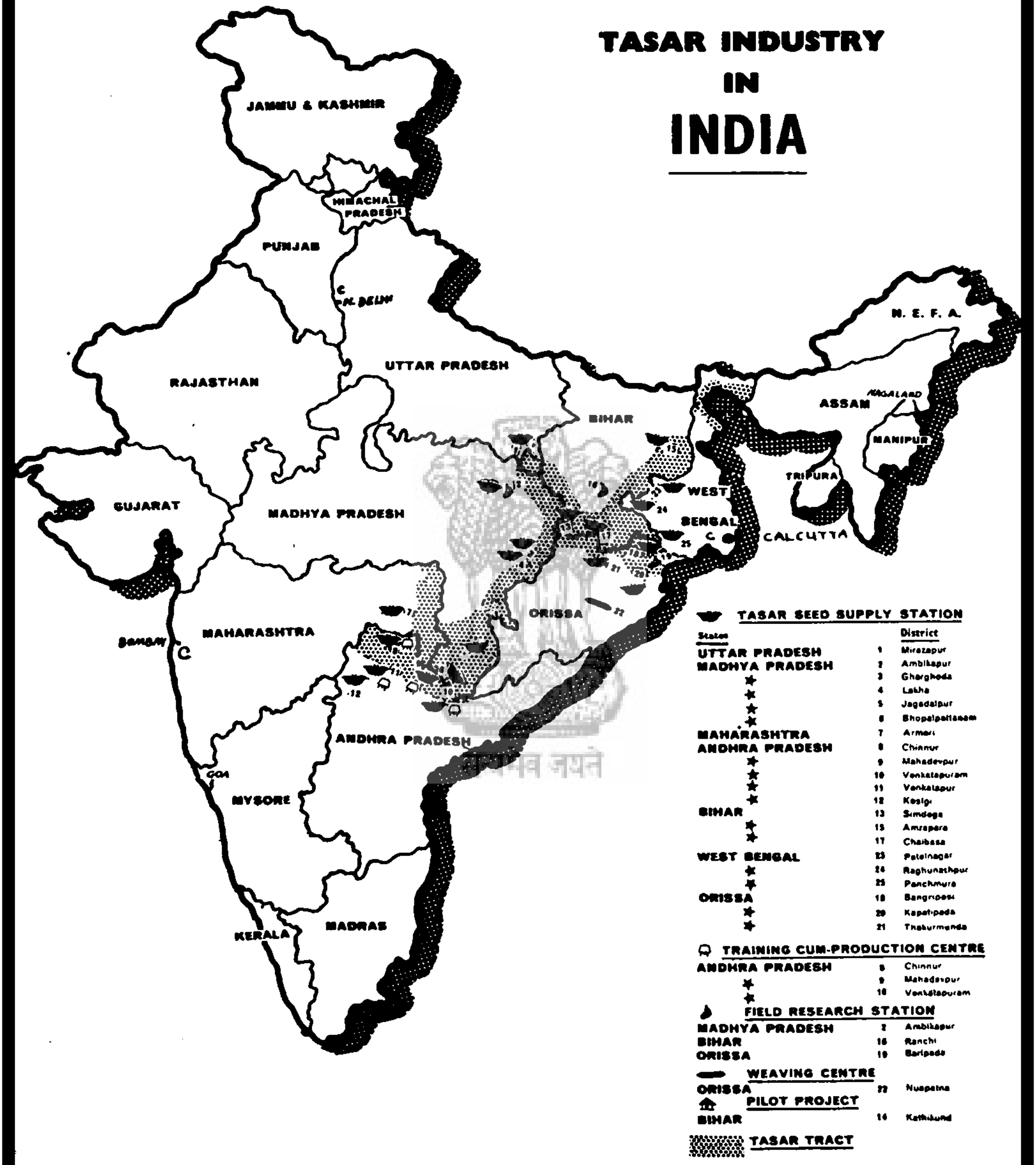
ESTIMATED PRODUCTION OF TASAR COCOONS IN INDIA (1965)

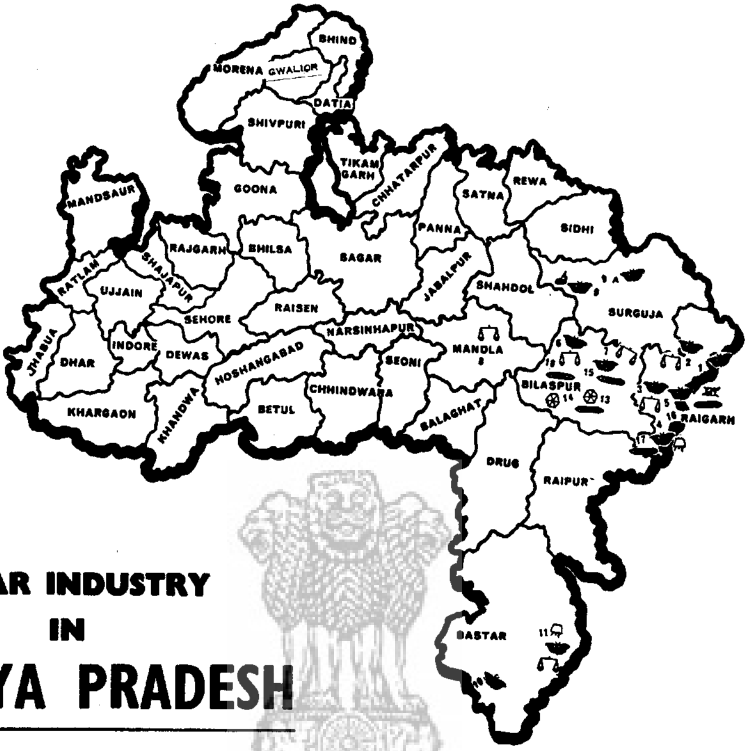


PRODUCTION OF TASAR SILK IN INDIA (1964)



TASAR INDUSTRY IN INDIA





TASAR INDUSTRY
IN
MADHYA PRADESH

MARKET

District		Location
RAIGARH	2	Lailunga
★	3	Chawl
BILASPUR	6	Katghora
★	7	Korba
MANDLA	8	MANDLA
BASTAR	12	Geadam

TASAR SEED SUPPLY STATION

District		Location
RAIGARH	1	Gharghode
★	2	Lailunga
★	3	Chawl
★	4	Baramkela
★	5	Lakha
BILASPUR	6	Katghora
★	7	Korba
SURGUJA	9	Ambikapur/9A Udies
BASTAR	10	Bhopalpattanam
★	11	Jagadalpur
	12	

TRAINING CUM-PRODUCTION CENTRE

RAIGARH	4	Baramkela
BASTAR	11	Jagadalpur

FIELD RESEARCH STATION

SURGUJA	9	Ambikapur

WEAVING CENTRE

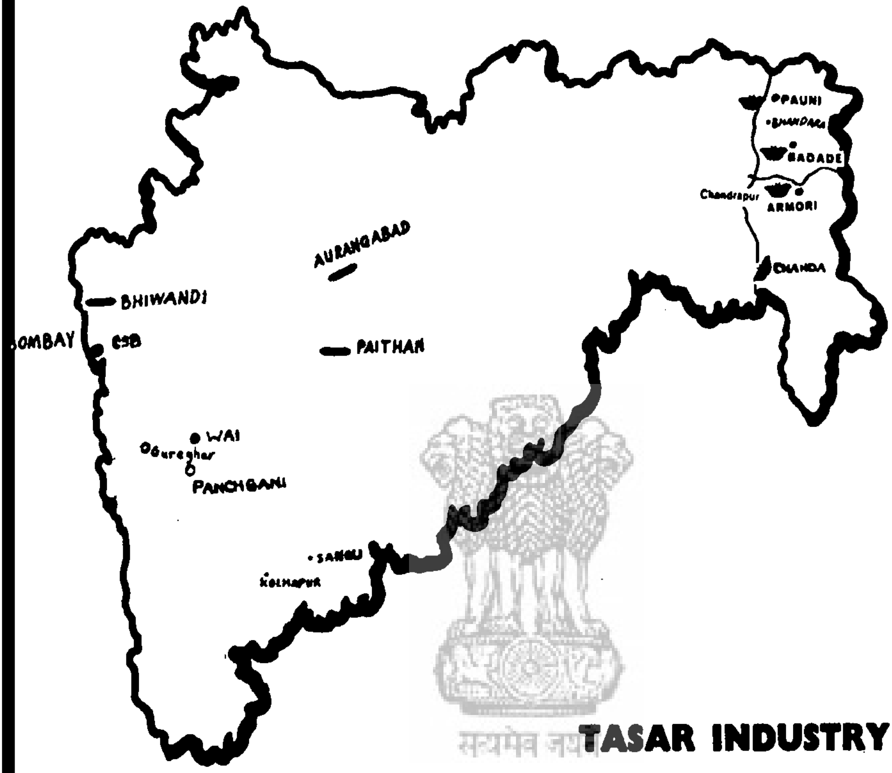
BILASPUR	13	Seoni
★	15	Champa
★	18	Chandrapur
RAIGARH	16	Raigarh
★	17	Sarangarh

CO-OPERATIVE

RAIGARH	1	Gharghoda

REELING UNITS

BILASPUR	13	Seoni
★	14	Bilaspur



सत्यमेव जयते

TASAR INDUSTRY
IN
MAHARASHTRA STATE

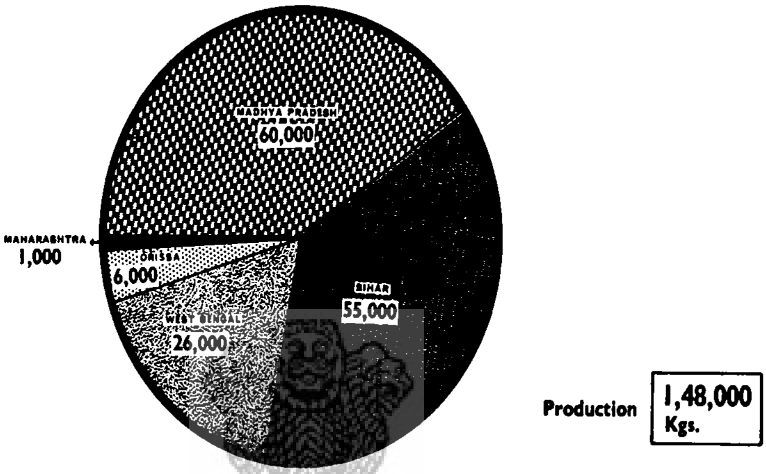
TASAR SEED SUPPLY STATION

Location	District
PAUNI	BHANDARA
BADADE	
ARMORI	Chandrapur

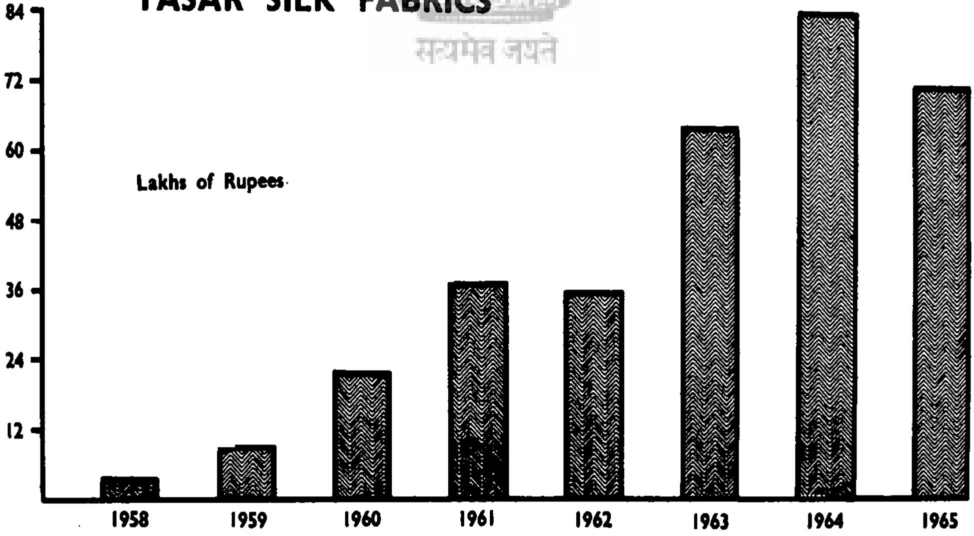
WEAVING CENTRE (All Silk)

Bhiwandi	Thana
Paithan	Aurangabad
Aurangabad	"

TASAR SILKWASTE PRODUCTION IN INDIA (1964)



EXPORT OF TASAR SILK FABRICS



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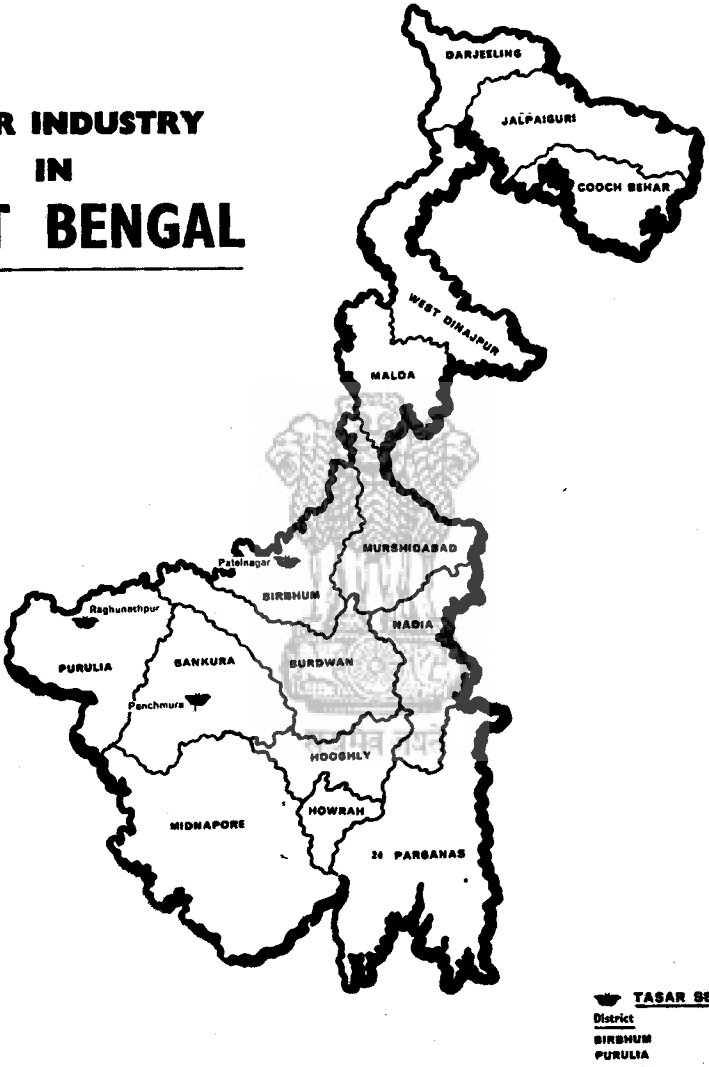
TASAR INDUSTRY
IN
WEST BENGAL



TASAR SEED SUPPLY STATION

District	Location
BIRBHUM	Patelnagar
PURULIA	Raghunathpur
BANKURA	Panchmura